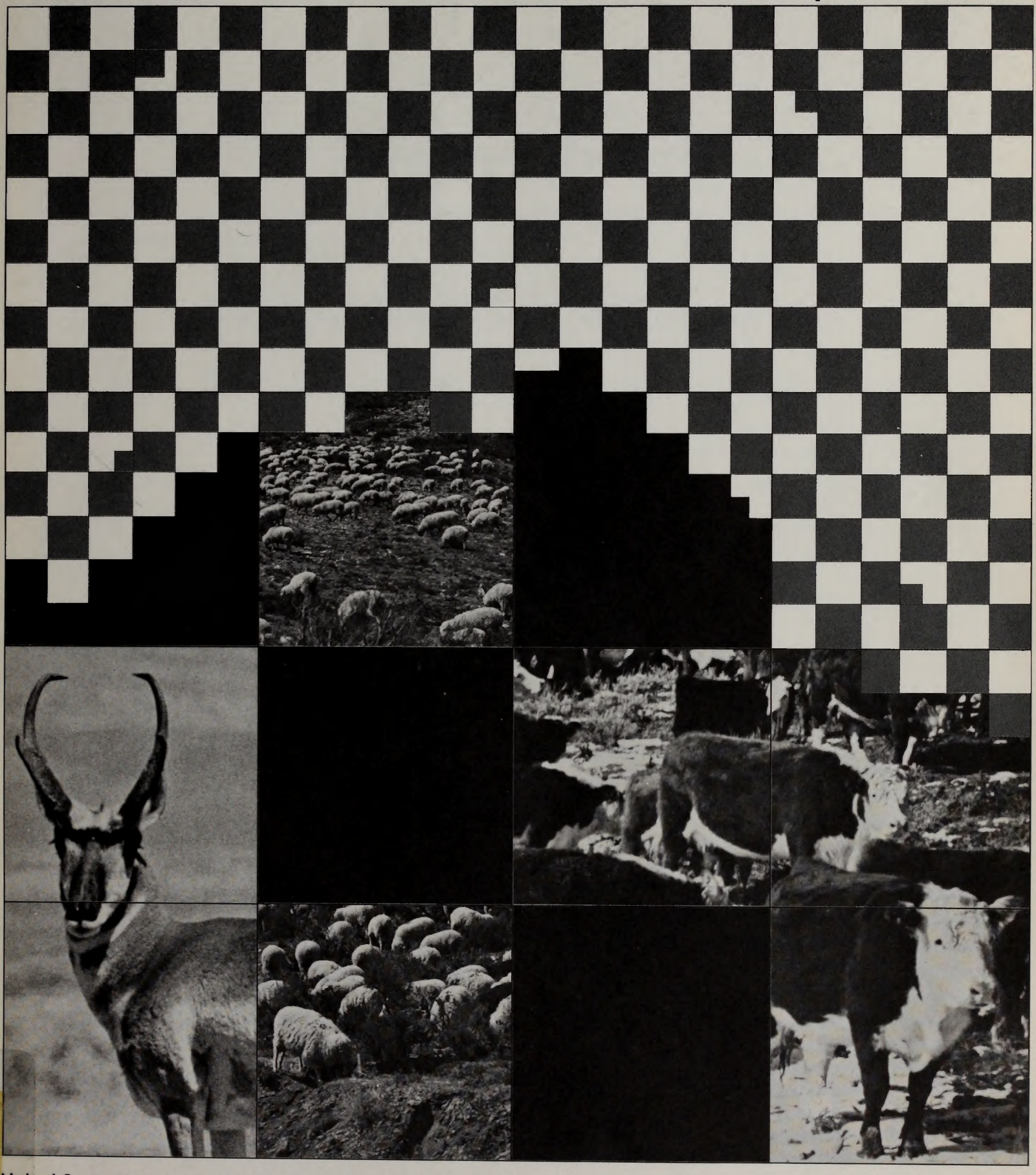
Salt Wells - Pilot Butte

GRAZING

Draft Environmental Impact Statement



United States Department of the Interior

Bureau of Land Management

Rock Springs District, Wyoming

PUBLIC HEARING REGISTRATION FORM

For the public hearing on the Salt Wells-Pilot Butte draft grazing environmental impact statement.

To: Salt Wells-Pilot Butte Grazing EIS Team Leader,
Bureau of Land Management, P.O. Box 1869, Rock Springs, Wyoming 82901

From: Name _____
(Please Print)

Street Address _____

City, State, Zip Code _____

Representing _____

I wish to offer testimony at the public hearing on July 13, 1983, in Rock Springs (Western Wyoming College, Room C-204, at 7 p.m.).

I intend to submit written documentation: Yes _____ No _____

I understand that registration forms may be submitted to the Rock Springs District Office before the close of business July 13, 1983, or presented at the registration desk before or during the public hearing. Verbal testimony will be limited to 10 minutes. Written testimony will be accepted by the EIS Team Leader at the above address until close of business July 31, 1983.

Signature _____

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
State Office
P. O. Box 1828
Cheyenne, Wyoming 82001

IN REPLY
REFER TO:

Dear Reviewer:

This draft environmental impact statement (DEIS) contains an analysis of the Bureau of Land Management's proposal for management of livestock grazing on over 3 million acres of public and private land in the Salt Wells Resource Area, and the Pilot Butte portion of the Big Sandy Resource Area, Rock Springs District, Wyoming. The proposal is to manage grazing allotments at different levels of intensity to maintain or improve existing conditions. Proposed actions include changing grazing treatments and providing additional grazing management facilities and land treatments. Four alternatives--Continuation of Existing Situation (No Action); License No Livestock Use on Public Lands; Emphasize Livestock Production; and Emphasize Watershed, Wildlife Habitat, and Soil Stability--are analyzed in addition to the proposed action. The affected environment is described, and the environmental impacts are documented.

We welcome all comments on this DEIS, and every comment will be used in the decisionmaking process. Comments should be as specific as possible and address the adequacy of the scope and/or impact analyses of the DEIS. Please retain this copy of the DEIS as the final EIS may be prepared using an abbreviated format consistent with the Council on Environmental Quality regulations.

All comments must be received by July 31, 1983, and should be addressed to:

Jim Cagney, Team Leader
Bureau of Land Management
Salt Wells Resource Area
P. O. Box 1869
Rock Springs, Wyoming 82901
(307) 382-5350

Sincerely yours,

Maxwell T. Lieurance

Maxwell T. Lieurance
State Director

DRAFT

ENVIRONMENTAL IMPACT STATEMENT

PROPOSED GRAZING MANAGEMENT PROGRAM FOR THE SALT WELLS-PILOT BUTTE AREA

SWEETWATER AND UINTA COUNTIES, WYOMING

Prepared By:

DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

ROCK SPRINGS DISTRICT

STATE DIRECTOR

WYOMING STATE OFFICE

1983

COVER SHEET

Salt Wells-Pilot Butte Grazing Environmental Impact Statement

(X) Draft ( ) Final

Lead Agency

U.S. Department of the Interior, Bureau of Land Management

Cooperating Agencies

U.S. Department of Agriculture, Forest Service

U.S. Department of the Interior, Bureau of Reclamation

Counties That Could Be Directly Affected

Sweetwater and Uinta counties, Wyoming

Abstract

This environmental impact statement (EIS) assesses the environmental consequences of the Bureau of Land Management's implementation of a proposed livestock grazing management program for the Salt Wells-Pilot Butte area of southwestern Wyoming. The proposed action includes "improvement" category management on eighteen allotments totalling 1,006,929 acres; "maintenance" category management on five allotments totalling 2,166,010 acres; and "custodial" category management on seven allotments totalling 9,343 acres. Proposed range improvements include 70 water developments; vegetation treatment on 52,973 acres; and 160 miles of fence in the "improvement" category allotments. Other major components of the proposed action include reduction of wild horse numbers to the herd management plan levels in four wild horse herd management areas; licensing of projected increases in forage production to livestock operators until suspended preference is restored; providing yearlong habitat for wildlife, recognizing that state and private lands also provide wildlife habitat proportional to their productivity; and assigning range improvement maintenance responsibility as specified in the Rangeland Improvement Policy. Monitoring would be utilized to evaluate the effectiveness of the grazing program, and changes in management will be based on observed data resulting from monitoring.

The environmental consequences of alternatives to the proposed livestock grazing program are assessed in this EIS. Those alternatives include Continuation of the Existing Situation (no action); Emphasize Livestock Production; Emphasize Watershed, Wildlife Habitat, and Soil Stability; and License No Livestock Use on Public Lands.

Based on the issues and concerns identified during the scoping process, the EIS focuses on the impacts to soils and vegetation, watershed, wildlife, the livestock industry, recreation and visual resources, aquatic habitat, and socioeconomic conditions.

EIS Contact

Comments on this EIS should be directed to:

Jim Cagney, Team Leader
Bureau of Land Management
Salt Wells Resource Area
U.S. Highway 191 North
P.O. Box 1869
Rock Springs, Wyoming 82901
(307) 382-5350

Date By Which Comments Must Be Received:

July 31, 1983

SUMMARY

The Salt Wells-Pilot Butte Grazing Environmental Impact Statement (EIS) analyzes the effects of livestock grazing on over 3 million acres of land within the Bureau of Land Management (BLM) Rock Springs District, Wyoming. This document will be used to assist in determining the future course of grazing management in the area. This EIS examines five alternatives:

A. The Proposed Action, which is the Bureau's preferred alternative.

B. Continuation of the Existing Situation (No Action)

C. Emphasize Livestock Production

D. Emphasize Watershed, Wildlife Habitat, and Soil Stability

E. License No Livestock Use on Federal Lands

Some of the major issues with respect to grazing which were identified in the scoping process are:

1. Management of riparian bottomlands.
2. Gully headcutting of drainages.
3. Maintaining wildlife habitat.
4. Maintaining the economic basis for the local livestock industry.
5. Wild horse management.
6. The effects of livestock grazing on soils, watershed, vegetation, recreation, cultural, visual, and wilderness resources.

THE PROPOSED ACTION

This alternative is designed to provide the most balanced management of livestock and other resources. Major components include:

—License future increases in forage to livestock operators until suspended preference is restored, then distribute where demand is greatest. (See text for further details.)

—Process requests for conversion of kind of livestock following a study of suitability.

—Assign maintenance responsibility for range improvements as specified in the Rangeland Improvement Policy.

—Provide yearlong habitat for wildlife (big game), recognizing that private and state lands also provide habitat proportional to their productivity.

—Manage four wild horse herd management areas for a total of 850 head in the Salt Wells-Pilot Butte area.

—Continue existing stocking rates, season of use, and kind of livestock until monitoring results indicate a change is appropriate.

—Develop four small riparian exclosures.

—Manage eighteen allotments (1,006,929 acres) as improvement allotments. In these allotments:

—Conduct production inventories on three allotments.

—Implement 70 water developments.

—Implement vegetation treatment on 52,973 acres.

—Develop or continue grazing treatments for all eighteen allotments.

—Consolidate two allotments into one.

—Construct 160 miles of fence.

—Manage twelve allotments (2,175,353 acres) as maintenance or custodial allotments. In these allotments authorize approved range improvement projects by private individuals or organizations.

Long-term environmental consequences include:

—Overall reduction of soil loss, although some areas would continue to lose significant amounts of soil through further gully development.

—There would be an overall improvement of riparian habitat, watershed and fisheries development.

—Vegetation productivity and cover would improve, with range in fair and poor condition improving about one-half of an ecological condition class.

—Change from shrub to grass dominance on 52,973 acres scheduled for vegetation treatment.

—There would be 12,488 AUMs of additional livestock forage.

—Wild horses would be reduced by 1,466 from the 1983 Wild Horse Census.

—Improvement of wildlife habitat would result in opportunity for an estimated 389 additional hunter-days, based on projected big game population increases.

—Moderate impacts to cultural resources would continue.

—There would be stable or slightly improved recreation opportunities and overall aesthetics.

—Regional income (all direct and indirect changes) would increase $507,700 per annum, compared to present.

—The overall positive benefit/cost ratio would be 1.447.

CONTINUATION OF THE EXISTING SITUATION (NO ACTION)

Under this alternative, the present grazing program would remain intact for the purpose of analyzing the effects of grazing if no changes were initiated. Major components include:

—All existing AMPs would be continued.

—No new AMPs would be developed.

—No range projects; e.g., water developments, or vegetation treatments; would be implemented.

—Existing facilities would be maintained under the guidelines of the range improvement policy.

—An average of 850 wild horses would be managed under the provisions of existing wild horse herd management area plans.

—No allotments would be divided or combined.

Long-term environmental consequences include:

—There would be significant increases in soil loss and continued gully headcutting of drainages.

—There would be a continued decrease in riparian habitat, watershed, and fisheries development.

—Vegetation productivity would decrease, with ny preferrred sites deteriorating from fair to poor condition.

—There would be a loss of 9,180 AUMs of livestock forage.

—Wild horses would be reduced by 1,466 from the 1983 Wild Horse Census.

—Wildlife habitat would be lost, with an associated loss of an estimated 475 hunter-days. (Hunter-day calculations are based on available game.)

—Impacts to cultural resources would increase.

—Recreation opportunities would be stable or declining.

—Regional income would decrease $494,700 per annum, compared to present.

—The overall negative (less than one) benefit /cost ratio would be 0.888.

EMPHASIZE LIVESTOCK PRODUCTION

Under this alternative management would favor livestock use within the area. This alternative differs from the proposed action in the following ways:

—All future increases in forage would be licensed to livestock operators.

—No riparian exclosures would be developed.

—Eighteen allotments (1,006,929 acres) would be managed as improvement allotments; however, the alternative would entail:

—Implementing 83 water developments.

—Implementing vegetation treatment on 84,994 acres.

—Constructing 162 miles of fence.

Long-term environmental consequences include:

—Overall soil losses would be slightly reduced. Many areas would continue to be overused. Gully headcutting would continue in many areas.

—Eighteen allotments (1,006,929 acres) would be managed as improvement allotments; however, the alternative would entail:

—Implementing 83 water developments.

—Implementing vegetation treatment on 84,994 acres.

—Constructing 162 miles of fence.

Long-term environmental consequences include:

—Overall soil losses would be slightly reduced. Many areas would continue to be overused. Gully headcutting would continue in many areas.

—Riparian habitat, watershed, and fisheries development would stabilize or decrease slightly. Some improvement may be observed in some areas.

—Vegetation productivity and cover would improve, with range in fair and poor condition improving about one-half of an ecological condition class.

—There would be a change from shrub to grass dominance on 84,994 acres under vegetation treatment.

—There would be 16,577 AUMs of additional livestock forage.

—Wild horses would be reduced by 1,466 from the 1983 Wild Horse Census.

—Wildlife habitat would be stable or slightly declining with an estimated loss of 66 hunter-days (based on the availability of big game habitat). Sage grouse habitat would decrease.

—Impacts to cultural resources would increase.

—Recreation opportunities would be stable or slightly decreased.

—Regional income would increase $563,700 per annum, compared to present.

—The overall positive benefit/cost ratio would be 1.333.

EMPHASIZE WATERSHED, WILDLIFE HABITAT AND SOIL STABILITY

Under this alternative management would favor soil, water resources, and wildlife. This alternative differs from the proposed action in the following ways.

—Future increases in forage would be utilized for watershed, wildlife, and soil stability. (See text for further details.)

—Restrict conversion of kind of livestock in 20 allotments.

—Develop 7 small riparian exclosures.

—Eighteen allotments (1,006,929 acres) would be managed as improvement allotments; however, the alternative would entail:

—Implementing 32 water developments.

—Implementing prescribed burns on 38,843 acres.

—Constructing 160 miles of fence.

—Continuing or developing allotment management plans on all 18 allotments. AMPs would be designed specifically for enhancement of soils, watershed, and wildlife resources.

Long-term environmental consequences include:

—There would be an overall reduction in soil loss. Only the most preferred grazing sites will be subject to site deterioration.

—There would be an overall improvement of riparian habitat, watershed, and fisheries development.

—Vegetation productivity and cover would improve with fair and poor condition range improving about one-half of an ecological condition class.

—There would be a change from shrub to grass dominance on 38,843 acres of vegetation treatment.

—There would be a loss of 151 AUMs of livestock forage.

—Wild horses would be reduced by 1,466 from the 1983 Wild Horse Census.

—Wildlife habitat would improve significantly, with an opportunity for an estimated 619 additional hunter-days, based on increased availability of big game.

—Moderate impacts to cultural resources would continue.

—Recreational opportunities and overall aesthetics would improve.

—Regional income would increase $108,200 per annum, compared to present.

—The overall positive benefit/cost ratio would be 1.271.

LICENSE NO LIVESTOCK USE ON PUBLIC LANDS

Under this alternative the environment would be allowed to respond to its full potential with a minimum of livestock use. Major components include:

—Operators would be allowed to run only the currently recognized stocking rate from their unfenced private lands over the entire allotment acreage, provided this land is currently being run in common with the public lands.

—No AMPs would be developed; existing AMPs would be dropped.

—Conversions in kind of livestock would be allowed following a favorable analysis of suitability.

—Wildlife would be allowed to expand to the carrying capacity of their habitat.

—Four wild horse herd management areas would be managed for a total of 850 head in the grazing management area.

Long-term environmental consequences include:

In this alternative livestock use is dependent upon the amount of use on private and state lands within a given allotment. As a result the environmental impacts would vary a great deal from allotment to allotment. The following summary must be considered as averages for the entire area.

—There would be an overall stabilization of soils, largely on upland sites, with continued deterioration of many stream bottoms. Gully headcutting would continue in some areas.

—Current trends with respect to riparian habitat, watershed, and fisheries would continue, with significant improvement in localized areas.

—There would be significant improvement in vegetation condition on upland sites.

—There would be a loss of 197,971 AUMs of livestock forage.

—Wild horses would be reduced by 1,466 from the 1983 Wild Horse Census.

—Upland wildlife habitat would improve significantly, resulting in an estimated 9,705 additional hunter-days based on increased availability of big game.

—Impacts to cultural resources would be reduced.

—Recreational opportunity and overall aesthetics would increase.

—Regional income would decrease $6,854,800 per annum, compared to present; regional employment losses would be significant.

—No benefit/cost analysis was performed for this alternative.

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PURPOSE AND NEED

The purpose and need of the proposed action and alternatives as stated in the grazing management policy are to attain the following goals:

1. Authorize livestock grazing of the public rangelands under the principles of multiple use and sustained yield;
2. Protect, maintain, and improve the rangeland resources through sound land use and grazing management decisions;
3. Conduct the level of soil and vegetation inventories necessary to support management decisions and provide a baseline for monitoring programs;
4. Increase and encourage systematic cooperation, consultation, and coordination with rangeland users and owners of intermingled land as part of the land use and grazing management decision-making process;
5. Determine appropriate stocking levels (including proper season and area of use) based on the best available information, and authorize livestock grazing consistent with those stocking levels;
6. Initiate cost-effective rangeland improvements that will help improve the condition of the lands for livestock grazing, wildlife habitat, wild horses and burros, and watershed protection, etc.; and
7. Monitor rangeland resources and livestock use to assist in determining proper stocking levels and measure progress toward achieving management objectives.

The proposed action and alternatives portray a range of approaches the Bureau could take in administering the grazing program. Furthermore, this document indicates to the public the Bureau's intentions for managing the rangeland resource in the Salt Wells-Pilot Butte area as mandated by Congress in various legislation such as: Taylor Grazing Act, 1934; National Environmental Policy Act (NEPA), 1969; Federal Land Policy and Management Act (FLPMA), 1976; Endangered Species Act, 1973; Public Range Lands Improvement Act (PRIA), 1978; Wild and Free-Roaming Horse and Burro Act, 1971, etc.

CHAPTER 1

DESCRIPTION OF THE ALTERNATIVES INCLUDING THE PROPOSED ACTION

INTRODUCTION

Location and Area Covered

This Environmental Impact Statement (EIS) covers the Salt Wells Resource Area and the Pilot Butte portion of the Big Sandy Resource Area. The Salt Wells-Pilot Butte area encompasses approximately 3,294,355 acres located in southwest Wyoming, the vast majority of which is contained within Sweetwater County. Some of the land falls within Uinta County. Map 1-1 shows the overall location within the State of Wyoming.

The Salt Wells-Pilot Butte area is entirely contained within the Rock Springs District of the Bureau of Land Management (BLM). The entire Salt Wells Resource Area and a portion of the Big Sandy Resource Area are covered in this EIS. Interstate 80 forms the division between these two resource areas:Salt Wells is the area south of the Interstate and Big Sandy is north.

Land Status

The area contains a variable pattern of land ownership. Map 1-2 gives a land status overview for the area. Lands in the area include public land administered by the Bureau of Land Management (1,863,653 acres); other federal land (134,327 acres); State of Wyoming lands (92,359 acres); and lands owned by various private individuals or organizations (1,091,943 acres). Some lands (112,073 acres) within the area's boundary are not utilized for grazing, or are not used in conjunction with public land. These areas are discussed in the document, but only in terms of the overall socioeconomic impacts. The land pattern is characterized by "checkerboard" and solid block ownership.

Checkerboard

Congress in the Act of July 1, 1862, granted to the Union Pacific and Central Pacific Railroad Companies alternate sections of land for 20 miles on either side of the railroad line to encourage construction, operation, and maintenance of a transcontinental railroad and telegraph system between the Missouri River and the Pacific Ocean. This land pattern is still prevalent today. Generally private landowners control the odd-numbered sections and the BLM administers the even-numbered sections. Exceptions to this include homesteaded lands and state holdings. This alternating land pattern, when depicted on a colored land status map, resembles a checkerboard in appearance, resulting in the common nickname for this land pattern. Approximately two-thirds of the Salt Wells-Pilot Butte area is checkerboard.

Solid Block

Solid block lands are those which are predominantly federally owned. Small tracts of private and state lands are scattered throughout the solid block. One-third of the area is solid block.

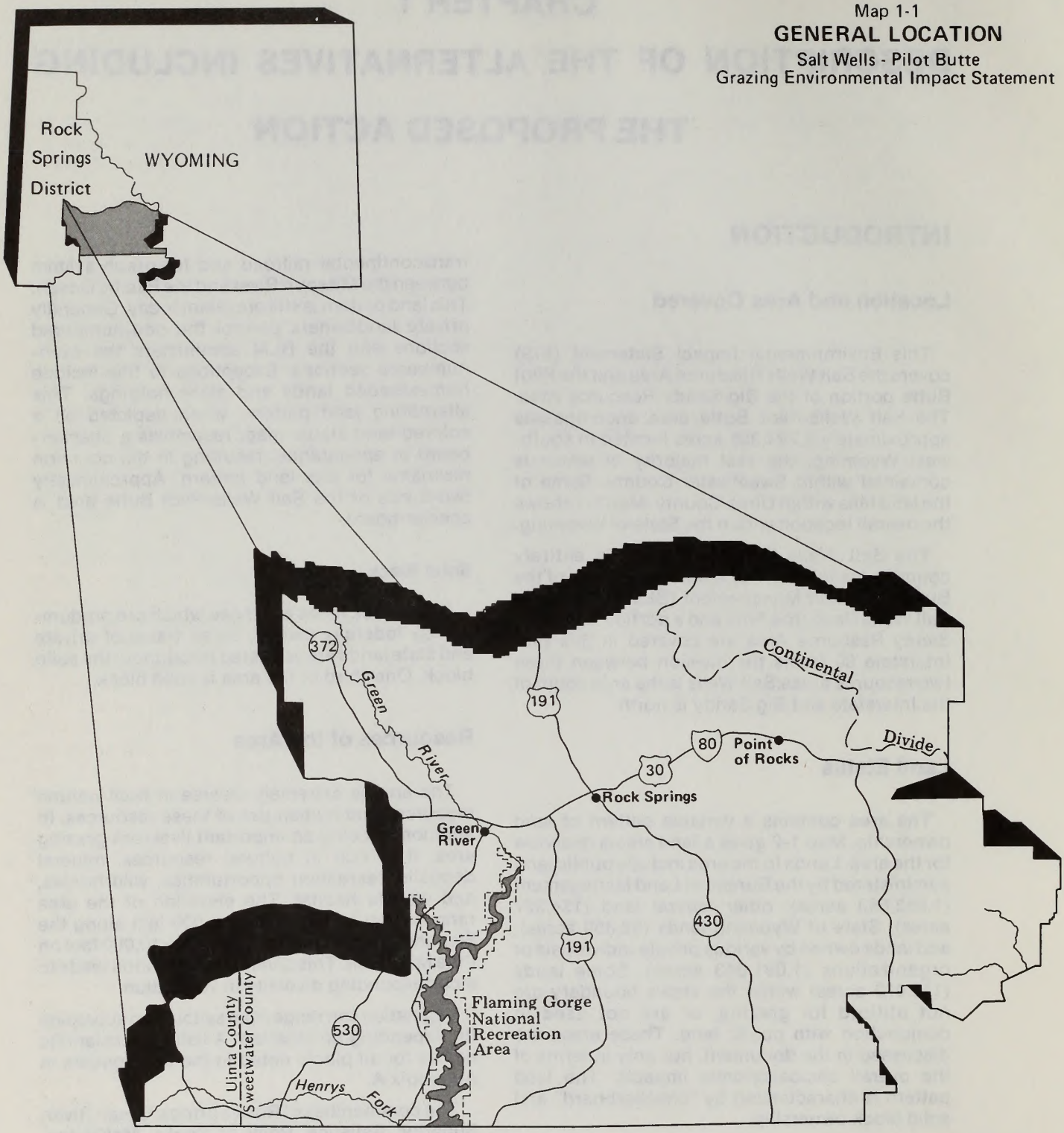
Resources of the Area

The area is extremely diverse in both natural resources and human use of these resources. In addition to being an important livestock grazing area, it is rich in cultural resources, mineral deposits, recreation opportunities, wild horses, and wildlife habitat. The elevation of the area ranges from approximately 6,000 feet along the Flaming Gorge Reservoir, to nearly 10,000 feet on Pine Mountain. This diversity in elevation leads to a corresponding diversity in vegetation.

Vegetation can range from saltbush to subalpine fir, depending on location. A listing of scientific names for all plants noted in the text appears in Appendix A.

The communities of Rock Springs, Green River, Superior, Reliance, Point of Rocks, McKinnon, Burntfork, and Lonetree are all within the area. As a result, livestock use has a high degree of visibility and human/livestock contacts are frequent. The people of the area use the local natural resources for both their livelihood and recreation. As a result most land use decisions are analyzed from divergent viewpoints.

Map 1-1
GENERAL LOCATION
Salt Wells - Pilot Butte
Grazing Environmental Impact Statement



DESCRIPTION OF THE ALTERNATIVES

The Rangeland Management Policy

The BLM has adopted a new grazing management policy which was finalized March 5, 1982. A copy of this policy is on file and available for review in all Bureau of Land Management offices. This policy encompasses seven major points which address administrative actions, data collection (inventory and rangeland monitoring), utilization of available funding, establishment of levels of grazing use, livestock supervision, range improvements, and public consultation.

Selective Management Approach

The rangeland management policy calls for an analysis of existing resource management situations, and development of allotment groupings based on classification criteria. Each group or category of allotments would have management tailored to meet identified needs. Since the grazing allotment is the fundamental unit of livestock management, categorization is established at this level. Three basic allotment groupings are specified in the policy: Allotments which are considered to be in the "maintain" (M) category are those where existing multiple-use conditions are considered to be largely acceptable. Allotments considered in unsatisfactory status with respect to multiple-use objectives would be in the "improve" (I) category. Custodial (C) areas are those in which the surface management agency concludes that the opportunity for positive economic return on public investment is unlikely. The narrative above greatly simplifies the criteria used in categorizing allotments. Table 1-1 shows the comprehensive criteria specified in the national policy, and the actual criteria used in categorizing the allotments in the Salt Wells-Pilot Butte area.

Categorization is used as a tool to facilitate priority management. Through utilization of this process, the Bureau is able to more clearly define and manage for specific issues. Resources and funds are allocated first to those problem areas where the results may provide the most positive multiple-use benefits on the investment of public funds.

This EIS contains a proposed action and four alternatives. The alternatives include continuation of existing situation (no action); emphasize livestock production; license no livestock use on public lands; and emphasize watershed, wildlife habitat, and soil stability. The categorization process is utilized in the proposed action and the two "emphasize" alternatives. No action is contrary to implementation of the new policy, but is required by the Council of Environmental Quality regulations. A no grazing alternative would require elimination of most of the policy guidelines.

Rangeland Improvement Policy

In conjunction with the Rangeland Mangement Policy, the Rangeland Improvement Policy outlines the Bureau's goal for investing in economically and environmentally sound rangeland improvements with the purpose of improving the public lands for multiple-use objectives. The policy specifies that (1) distribution and use of rangeland improvement appropriations will meet the intent of the law and the final judgment as amended in the NRDC court case; (2) decisionmaking will be delegated to the local level so the decisions respond to site-specific conditions; (3) rangeland users and others will be encouraged to actively participate in rangeland improvement efforts; (4) a maintenance program will be implemented which is designed to release more public funds for new improvements, transfer maintenance responsibilities for new improvements to the parties deriving direct and significant benefits from them, and ensure through maintenance that the resources will not be damaged, the improvement's useful life will be extended, and all investments will be protected; (5) sound investment strategies, giving first consideration to areas with serious resource use problems, will be outlined; (6) investment in cost-effective improvement that will achieve multiple-use management objectives will be ensured; (7) proposed improvements that cannot be justified on economic and/or environmental grounds will be eliminated; and (8) investment decisions will be documented for the prupose of public involvement and accountability. A copy of this policy is available in all BLM offices.

The Bureau has performed the necessary benefit/cost analyses. Table 1-2 summarizes the results of the analyses by alternative. More detailed information on the analyses is available for review in the BLM Rock Springs District Office.

Teble 1-1

SALT WELLS-PILOT BUTTE AREA ALLOTMENT CATEGORIZATION CRITERIA

	"M" MAINTENANCE	"I" IMPROVEMENT	"C" CUSTODIAL
GENERAL CHARACTERISTICS	--Present ecological renge cnndition is setisfectory. --Prasaot managament is satisfectnry. --Allntment hes a poteotial fnr high vagatatioo productivity end is produciog at or neer its potantiel. --Thera ere on, or vary limited, land-use rasourca cooflicts with livastock graziog. --Lend stetus may or mey oot be coosidarad (laod status maens the parcant of public lands intarminglad with stata end privataly ownad laods within e renga meoagament aras. Scattared trects of public lends end lands located in a chackerboerd pettarn will not oecesserily be included in, nr axcludad from this cetegory.) --Thara may ba pnsitive acnnomic raturn oo public invastmants.	--Present ecnlogical ranga conditinn is feir tn ponr, renga cooditinn end trend is epperantly dnwnverd. --Present grezing menegement practicas era inadequate tn meet lnog-tarm resnurce nbjactivas. --Allntment has potentiel for madium to high vagatativa productivity, but is oot producing oaar its potentiel. Vegatatioo productivity is ooly low to fair. --Rasnurce conflicts with livastock grezing era avidaot. --Potaotiel fnr pnsitive acooomic raturn nn public invastments.	--Presaot ecolngical raoge cnnditino is veriabla. --Allotment has potantial for lnw vegetetion prnductivity end is produciog et or neer its potential. --Rasource conflicts with livestnck are limitad. --There is nn prasaot likalihood nf pnsitive economic raturo on public investmaot.
CATEGORY CRITERIA	--Overall presant acologicel range cooditioo is fair or bettar. --Ecological renga cooditinos will be meiotainad or improvad with presant managameot. --Conflicts with livestnck grezing were oonexistent nr limitad. --Potential ecnoomic return on iovastmeots of public funds would be low to modareta. --Opportunities for BLM menegement may be limited dua to leod pattero, small acreage, and/or lnw percent nf public lands.	--Ovarell prasent ecolngicel renga cooditioo is poor to fair. --Presant managamant mey maintein nr ellnw a decline of the ecological range cnndition. --Cnnflicts with livestock grazing ara evidant. --Opportunities fnr menegement for imprnvement of vegetetion productioo ara gond to excallant. --Potentiel ecnnomic return nn investmants nf public funds would be mndarete to high. --Managameot chaogas may be nacassery end/or fassible.	--Prasaot vagatatioo productioo is below or near potantial. --Pntaotial aconomic return on invastmaot of public fuods would be extremely lnw nr onnexistent. --Opportunitias for BLM management ara vary limitad. --Conflicts with livastock grezing ere nonaxistant nr limited. --Majority of ranga sitas on allotmeot have low potentiel for high vagetatioo production. --Ecnlogicel range cnndition may very from poor to good.
MANAGEMENT OBJECTIVES	--Principel objactiva is to teka or authoriza actions that will maintein or improve the existing resource cooditioo and productivity.	--Priocipal objactiva is to implement ections thet will improve existing resource cooditions end productivity to aohaoce multiple use.	--Principal nbjactiva is tn manega laods in a manner thet will prevant datarioretioo of currant rasourca conditioo.
MANAGEMENT ACTIONS	--Livastock usa (numbers, class, saasoo of usa) will be parmittad as authorized uoder a 10-yaar parmit. Iocreases in usa mey be allowad when cnnsistant with multiple usa nbjactives. --Prascribed flexibility in livastock operations thrnugh consultation. --Ranga improvemaots will be euthnrized to meat managamant nbjactives. --BLM will conduct lnw intensity usa supervision and monitnring. --Mooitnring afforts will fncus nn chenges in ownarship or livastock oparetions. --Allntments will automaticelly be coosiderad for a chenge in cetegnry whan the grezing privilagas era trensfarrad nr with significent chengas in authorizad usa.	--Livastnck use may be iocraasad or decreesed es naeded to meat menegemaot objectives. --Renge improvemants will be euthorizad eod instelled as naeded to meet manegemant nbjactives. --BLM will conduct varieble intensity use supervision and mnoitnring. Monitnring will avaluete the effactiveness of actions teken tnverd echieving menegement of objectivas. --Allotments will be placad in tha Maintenence Cetagnry when rangaland acological conditinns are setisfectory aod conflicts with livestock graziog ara resolved.	--Livastock usa will ba: (e) parmittad es curraotly authorizad; (b) prascribed flaxibility of livastock oparatino through coosultetinn. --Raoge improvamaots (primarily faociog end wetar davalopmeot) will be euthorizad to meet managamaot objectivas. --BLM will conduct low iotaosity use supervisinn end monitoriog. Mooitnring will focus on changes io nwnership or livestock oparatioos. --Allotmants will eutnmatically ba considared for a chenga in catagory when tha graziog privileges era trensfarred, with significent chenges in euthnrized usa, or with chaogas in technnlngy.
FUNDING SOURCE	--Privata iovastmaot in range improvements. --Ranga battarmeot funds.	--Private iovastmeot in renga imprnvemants. --Renge betterment funds end FLPMA and Public Rangalands Imprnvement Act PRIA apprnprietinns.	--Private investment in range improvements. --Renge bettermaot funds (nnly for maintanance end/or multiple use projects).
GRAZING DECISIONS AFTER EIS	--Dacisioos issued besed on current ioformetinn, including coosultation, withio 9 months following EIS.	--Decisioos issuad within 17 mnnths fnllnwing EIS, aftar consultatinn end devalnpment nf manegement prescriptions with oparetinns.	--Decisinns issued besed nn current informetion, including coosultation, withio 12 mnnths following EIS.

Table 1-2

SUMMARY OF BENEFIT/COST ANALYSES BY ALTERNATIVE

	Total Discounted Benefits 1/	Total Discounted Costs 1/	Present Net Value 2/	Benefit/Cost Ratio 3/
Proposed Actioo	$2,810,307.53	$1,941,729.52	$868,578.01	1.447
Continuation of the Existiog Situatioo	596,646.53	672,192.71	-75,546.18	0.888
Emphasize Livestock Production	2,994,653.74	2,250,787.39	743,866.35	1.33
Liceose No Livestock Use On Public Laods	NA	NA	NA	NA
Emphasize Watershed, Wildlife Habitst, and Soil Stability	2,081,457.68	1,638,190.25	443,267.43	1.271

Source: Beoefit/Coat Anslyses of Grszing Allotments in the Salt Wells-Pilot Butte Area (BLM 1982). The detailed information on these snalyses is svailable in the BLM Rock Springs District Office. Benefit/cost analyses were performed in accordance with the procedures outlined in BLM Instruction Memorandum 83-27.

1/ Totsl discounted benefits snd costs are the annual benefits received snd costs incurred from s specific project over s 50-year timeframe, discounted back to the present time.

2/ Present net value is the difference between total discounted benefits and total discounted costs.

3/ The benefit/cost ratio is a comparison of the estimated total discounted economic benefits from a project to the total discounted coat of implementation, operation, maintenance, snd replacement of the project during s 50-year time period.

SCOPE OF THE EIS

This EIS is prepared to comply with the NEPA, the 1978 CEQ regulations, and the *Natural Resources Defense Council (NRDC), et al.* vs. James Watt, et al. 1974 court order which required each EIS to discuss in detail "livestock grazing activities" and all reasonable alternatives thereto.

The document analyzes the general effects of grazing management actions. Emphasis will be on the anticipated environmental impacts of various types of projects such as vegetation treatments, water developments, or fencing rather than the impacts of any single project at a specific location. When exact locations of proposed projects such as reservoirs, fences, or vegetation treatments are known, these locations are specified. This information should be viewed as the best estimates based on consultation and inventory data. Field checking and consultation with additional BLM personnel, livestock operators, Wyoming Game and Fish Department, and other affected individuals, organizations, or agencies would be required before actual implementation in the field. Additional projects or changes in proposals are expected to occur during the development allotment management plans. Impacts of management actions are considered in aggregate on a grazing allotment level. Should an individual project be unique, involving environmental or other considerations not discussed in this document, this project would be subject to a site-specific environmental assessment.

Results of Scoping Contacts

During the development of the alternatives and categorization of the allotment the majority of the livestock operators were contacted. Appendix B contains a list of individuals and organizations contacted during the scoping process.

These operators also assisted in identifying areas where water development is necessary, as well as providing other pertinent resource information. Generally the Bureau has received a limited response to scoping. Only nine people attended the July 27, 1982, scoping meeting. However, subsequent meetings were held with the board of the Western Wyoming Livestock Users Association, Incorporated, and BLM also met with representatives of the Wyoming Game and Fish Department.

Issues Identified

The livestock users' main comment was that BLM's original animal unit month (AUM; see Glossary) improvement projections were overly optimistic. It was also pointed out that since "M" allotments imply satisfactory conditions, the Bureau should not be recommending projects in these allotments. Both these comments were incorporated into the proposed action. During the scoping process, gully erosion and head-cutting, declining riparian vegetation, wildlife habitat, recreation, wild horse management, the effects of energy development on grazing management, and range economics were identified as significant issues in the area.

DEVELOPMENT AND IMPLEMENTATION OF PROPOSED ACTION AND ALTERNATIVES

Planning System

The Salt Wells and Big Sandy planning documents were utilized in the preparation of this EIS. The proposed action and alternatives were developed through a series of planning steps resulting in two BLM documents called the Unit Resource Analysis (URA) and the Management Framework Plan (MPF). Copies of these documents are available for review in the respective area office. Through the planning process specialists for each resource (i.e., lands, minerals, forestry, cultural resources, range, watershed, wildlife, and recreation) developed a single-use oriented, resource-specific program. These programs were later molded into one comprehensive multiple-use management program by the Area Manager through multiple-use analysis. The following discussion describes, with respect to range management, the planning program chronologically through the various processes.

Steps in Land Use Planning

Unit Resource Analysis

During preparation of the URA, the physical resources of the planning unit are identified and each resource is quantified. Following this data development process, each specialist describes the present management as well as the opportunities for management of that specific resource.

Management Framework Plan

Following the resource quantification phase (i.e., URA), management proposals are developed through three basic steps in the MFP:

Step 1

From the range of opportunities described in the URA, each resource specialist develops a management program for the specific resource with which the specialist is involved. This program represents the best single-use approach to managing a given resource without consideration of impacts on other programs. For example, a range conservationist would not consider wildlife values in developing the grazing program.

Step 2

During this phase, the Area Manager considers all the specialists' recommendations, prepares a set of multiple use analyses which shows the interrelationships and conflicts of each resource recommendation with the other recommendations and, then develops a set of multiple-use recommendations for the resource area. This results in the proposed comprehensive management program.

Environmental Impact Statement

The BLM analyzes the potential impacts of the proposed MFP program through the EIS process.

—The proposed action is comprised of the Step 2 multiple-use recommendations.

—The Emphasize Livestock Production Alternative draws information from the single-use resource recommendations of the range staff.

—The Emphasize Watershed, Wildlife Habitat, and Soil Stability Alternative draws information from the single-use recommendations of the specialists for each of those resources.

—The Continuation of Existing Situation (No Action) Alternative utilizes the present situation as described in the URA.

MFP Step 3

Utilizing the impact analysis of the EIS and the accompanying public inputs, the District Manager makes the final multiple-use decisions, with the concurrence of the State Director.

Implementation

Following the completion of final decisions, the implementation process begins. The following steps explain the basic process:

DESCRIPTION OF THE ALTERNATIVES

Decision Record

A Rangeland Program Summary (RPS) is prepared and published within five months following the completion of the final EIS. The summary describes land use planning decisions made by the District Manager and the rationale for the decisions. Allotment Management Plans (AMPs; see Glossary) are then prepared, and range improvements are implemented. Site-specific environmental assessments (EAs) are prepared as necessary.

Monitoring.

Studies are made to determine if management goals and objectives are being met; adjustments are made as necessary.

Timeframes

The Rangeland Management Policy specifies the timeframe in which final grazing decisions will be issued (Table 1-1). The final decision schedule is dependent upon the allotment category. Final decisions on "M" allotments could be expected within five to nine months after completion of the EIS. Those allotments which are currently considered in satisfactory ecological condition are scheduled for the earliest final decisions. Allotments in "C" status are expected to have final decisions within five to twelve months. The allotments slated for improvement ("I") should be ready for final decisions within five to seventeen months following completion of the EIS. "I" allotment categorization necessitates the development of an AMP in which water developments, vegetation treatments, and grazing are coordinated into a cohesive, site-specific allotment management plan. Development of these AMPs would require extensive consultation with the livestock operators and land use specialists to ensure that all land management objectives are incorporated. The "I" allotments include the vast majority of proposed range projects. These proposals are listed so that the impacts may be addressed. It is hoped that implementation of AMPs and the associated range improvements, would begin immediately following the final decisions. This should not be viewed as a commitment of funds. Table 1-3 shows recent funding for new range projects in the Rock Springs District. It should be noted that these monies are allocated by the District Manager to the District's four resource areas, not just the area considered in this EIS; however, areas currently under AMP implementation generally receive more funds than their proportionate share. Each alternative which involves range projects includes a priority ranking under which available funds would be utilized. The ranking is based on available information concerning resource conflicts and the benefit/cost analysis. Final ranking of allotments would be made by the District Manager as part of the final decisions, in consultation with the District Grazing Advisory Board.

Individual range management projects may be developed at any time, subject to completion of site-specific environmental assessment for each project and finding of no significant impact as a result of implementing the project.

PROPOSED ACTION

The criteria in Table 1-1 were utilized to group allotments into management categories (improve, maintain, or custodial) for the proposed action. Locations of these allotments can be found on Map 1-2. The allotments by category can be seen in Table 1-4. Those actions inherent in the proposed action include the following:

Major Actions

1. Take management action to improve current unsatisfactory multiple-use conditions in the 18 "improve" allotments. Utilize Table 1-5 to prioritize the "I" allotments. Utilize available funds to initiate range improvements in approximately the order shown in Table 1-4.

   a. Continue present kind of livestock, season of use, and amount of use shown on Table 1-6, until monitoring or inventory data indicate a change is appropriate.

   b. Conduct forage production inventories as funds become available in Henrys Fork (Pastures E and F), Hanks, Sage, and Cottonwood Creek allotments.

   These inventories would be accomplished using an approved method.

   c. Implement monitoring studies in accordance with the Salt Wells monitoring plan. This monitoring plan can be found in Appendix C. Monitoring data would aid in

Table 1-3

FUNDING FOR CONSTRUCTION OF NEW RANGE PROJECTS IN THE ROCK SPRINGS DISTRICT

	Source of Funding		
Year	Range Management Budget (4322)	New Construction From Range Betterment Funds from Grazing Fee (8100)	Public Rangelands Improvement Act (PRIA) Appropriations
1983*	0	91,240	0
1982	100,500	95,240	0
1981	51,200	285,000	0
1980	0	142,500	0
1979	0	215,700	0

*Projected.

Table 1-4

ALLOTMENTS AND ACREAGE BY MANAGEMENT CATEGORY

Maintenance ("M")		Improvement ("I")[1/]		Custodial ("C")	
Allotment	Acres	Allotment	Acres	Allotment	Acres
Rock Springs (N of I-80)	955,529	Red Creek	69,038	Dooohoo	992
Rock Springs (S of I-80)	1,132,718	Salt Wells	53,195	Poisoo Creek	724
Rife	44,705	Pioe Mouotain	70,978	Hiaey Hollow	918
Alkali Creek	29,226	Vermillioo Creek	149,193	Cedar Point	1,440
Laraon	1,943	Spring Creek	45,472	Peoplea Canal	2,207
Stag Hollow	1,889	Mellor Mountain	70,313	Circle Bar	652
5 Allotmeots	2,166,010	Circle Springa	22,301	Sage	2,410
		Sugarloaf	91,985	7 Allotmenta	9,343
		Henrya Fork	339,388		
		Sage Creek	24,355		
		Hickey Mountaio	8,407		
		Horaeshoe Wash	7,663		
		Antelope Wash	8,136		
		Crooked Wash	11,143		
		Hanks	3,571		
		Cottonwood Creek	4,688		
		Bald Hills	5,517		
		Fourth of July	21,586		
		18 Allotments	1,006,929		

1/ The allotmenta in thia category are ranked baaed on the overall need for improvemeot. Table 1-5 gives an overview of the rationale uaed in developing thia order of rank. Thoae allotmenta at the top of the list would be first priority with reapect to BLM funding.

Table 1-5

LAND USE CONFLICTS WITH LIVESTOCK IN EACH ALLOTMENT*

ALLOTMENT NAME AND NUMBER	WILDLIFE	FISHERIES	WATERSHED QUALITY AND/OR QUANTITY	SOIL (EROSION)	FOREST MANAGEMENT	WILD HORSES	PREDATORS
3016 Fourth of July	2	0	1	2	0	3	1
3018 Rock Springs	3	1	2	2	1	3	3
4000 Sage Creek	2	2	3	3	1	1	1
4001 Circle Springs	3	0	2	3	1	3	3
4002 Rife	3	0	2	2	1	3	3
4003 Vermillion Creek	3	2	3	2	1	3	3
4004 Alkali Creek	2	2	1	1	0	3	3
4005 Crooked Wash	2	0	2	2	0	0	3
4006 Horseshoe Wash	2	0	1	1	0	2	3
4007 Pine Mountain	3	4	3	3	2	1	3
4008 Red Creek	3	4	4	4	2	0	1
4009 Salt Wells	3	3	3	3	2	3	1
4010 Sugarloaf	3	3	3	3	2	1	1
4011 Spring Creek	2	2	2	3	1	0	1
4012 Henrys Fork	3	2	2	2	1	0	3
4013 Hickey Mountain	3	1	1	2	2	0	1
4014 Larson	2	1	1	1	0	0	3
4015 Stag Hollow	1	0	1	1	0	0	3
4016 Donohoo	1	0	1	1	0	0	3
4017 Poison Creek	1	0	2	2	0	0	1
4018 Bald Hills	2	0	1	1	0	0	1
4019 Hanks	2	1	1	1	0	0	0
4020 Hisey Hollow	2	0	2	2	0	0	0
4021 Cedar Point	2	0	1	1	1	0	0
4022 Antelope Wash	2	1	3	3	0	0	0
4023 Circle Bar	1	0	1	1	0	0	0
4024 Sage	2	0	3	3	0	0	3
4025 Cottonwood	2	1	2	2	0	0	0
4026 Peoples Canal	1	0	2	2	0	0	0
4027 Mellor Mountain	3	1	2	3	1	3	3

*These figures represent the resource area staffs' subjective estimates of the status of the respective resource values. They are presented to provide a comparative analysis of the relationships among the allotments and are not intended as objective data.

The following is an explanation of the numerical rating used for each conflict:

0 - Nonexistent Conflict does not exist and is not expected to develop in the foreseeable future.

1 - Slight Conflict is minimal at this time, but it is conceivable that this conflict could increase in the future.

2 - Moderate Data indicate this conflict may exist. Care should be taken in planning management actions to ensure an escalation of this conflict does not occur.

3 - Important Conflict is known to exist in the allotment. All management actions should address this problem, and only those actions which would either mitigate or not affect the conflict should be considered.

4 - Extreme Conflict is readily apparent. Immediate action is needed to prevent decline in resource values.

Table 1-5
(Cootinued)

ALLOTMENT NAME AND NUMBER	OIL & GAS	COAL	INSECT INFESTATION	NOXIOUS WEED AND POISONOUS PLANTS	OVER OBLIGATION OF LIVESTOCK FORAGE	ENDANGERED SPECIES	WILDERNESS	RECREATION (ORV)
3016 Fourth of July	1	0	0	1	3	1	0	3
3018 Rock Springs	2	2	0	2	1	1	0	2
4000 Sage Creek	0	0	1	2	2	1	0	2
4001 Circle Springs	2	0	0	2	2	1	0	2
4002 Rife	2	0	0	2	1	1	0	2
4003 Vermillioo Creek	2	0	0	2	1	1	0	2
4004 Alkali Creek	2	0	0	2	1	1	0	1
4005 Crooked Wash	1	0	0	1	1	1	0	0
4006 Horseshoe Wash	2	0	0	2	1	1	0	1
4007 Pine Mouotaio	2	0	1	2	2	1	0	2
4008 Red Creek	0	0	2	1	2	1	3	3
4009 Salt Wells	2	1	1	2	2	1	0	2
4010 Sugarloaf	0	0	1	2	2	1	0	2
4011 Spring Creek	1	0	4	2	1	1	0	2
4012 Heorys Pork	2	0	0	2	3	2	3	2
4013 Hickey Mountain	1	0	0	1	0	1	0	3
4014 Larson	1	0	0	1	1	1	0	0
4015 Stag Hollow	1	0	0	1	3	1	0	0
4016 Donohoo	1	0	0	1	3	1	0	0
4017 Poison Creek	1	0	0	1	4	1	0	0
4018 Bald Hills	1	0	0	1	2	1	0	0
4019 Hooks	1	0	0	1	2	1	0	0
4020 Hisey Hollow	1	0	0	1	2	1	0	0
4021 Cedar Point	1	0	0	1	2	1	0	0
4022 Antelope Wash	1	0	0	2	3	1	0	0
4023 Circle Bar	1	0	0	0	1	1	0	0
4024 Sage	1	0	0	2	2	1	0	0
4025 Cottoowood	1	0	0	2	2	1	0	0
4026 Peoples Caoal	1	0	0	1	1	1	0	0
4027 Mellor Mountaio	2	0	2	2	1	1	0	1

*These figures represeot the resource area staffs' subjective estimates of the status of the respective resource values. They are preseoted to provide a comparative aoalysis of the relationships among the allotmeots and are not iotended as objective data.

The following is ao explaoatioo of the oumerical rating used for each cooflict:

0 - Nooexisteot — Cooflict does not exist and is not expected to develop io the foreseeable future.

1 - Slight — Cooflict is mioimal at this time, but it is cooceivable that this cooflict could increase in the future.

2 - Moderate — Data iodicate this cooflict may exist. Care should be takeo io plaooing maoagemeot actions to eosure ao escalatioo of this cooflict does oot occur.

3 - Importaot — Cooflict is known to exist io the allotment. All maoagement actioos should address this problem, and ooly those actions which would either mitigate or oot affect the cooflict should be considered.

4 - Extreme — Cooflict is readily appareot. Immediate actioo is oeeded to preveot declioe io resource values.

Table 1-6

EXISTING KIND OF LIVESTOCK, LIVESTOCK USE, AND SEASON OF LIVESTOCK USE FOR "IMPROVEMENT" ALLOTMENTS

Allotment	No.	Active Preference in AUMs[1/]	Privately Controlled AUMs	Total AUMs	Kind of Livestock	Season of Use
Red Creek	4008	4,592	2,669	7,261	C	5-1 to 10-15
Salt Wells	4009	2,618	2,040	4,658	C & H	5-1 to 10-31
Pine Mountain	4007	8,600	1,966	10,566	C & S	5-1 to 1-31
Vermillion Creek	4003	12,903	2,157	15,060	C & S	yearlong
Spring Creek	4011	4,070	328	4,398	C	yearlong
Mellor Mountain	4027	6,101	3,061	9,162	C & S	4-16 to 12-15
Circle Springs	4001	946	1,460	2,406	C & S	5-1 to 12-15
Sugarloaf	4010	6,008	1,414	7,422	C	yearlong
Henrys Fork	4012	31,295	1,053	32,348	C, H & S	5-1 to 10-31 2 pastures winter use
Sage Creek	4000	1,117	1,228	2,345	C	yearlong
Hickey Mountain	4013	678	108	786	C	5-1 to 10-31
Horseshoe Wash	4006	607	0	607	C & S	12-1 to 3-31
Antelope Wash	4022	461	0	461	C	5-7 to 9-30
Crooked Wash	4005	2,292	0	2,292	S	12-1 to 2-28 12-15 to 4-15
Hanks	4018	593	10	603	C	5-1 to 9-30
Cottonwood Creek	4025	436	0	436	C	10-20 to 12-24 5-9 to 10-15
Bald Hills	4015	925	0	925	C	5-1 to 10-31
Fourth of July	3016	836	1,047	1,883	C	5-1 to 12-31
		85,078	18,541	103,619		

1/ See Glossary for definitions of grazing preference, active preference, and suspended preference.
2/ C-cattle; H-horses; S-sheep

determining if allotment management goals and objectives are being attained. The data may indicate that changes in management need to be made. For example, should monitoring data from a given allotment indicate that an increase or decrease in grazing animals is appropriate, the affected parties would be consulted and a decision would be issued by the Bureau of Land Management.

It is quite possible that monitoring data (at least initially) would show patterns of uneven use. This data can be utilized in developing AMPs. For example, areas of low utilization may need water development. Correction of poor livestock distribution is a key element of effective range management.

Monitoring data are also used to evaluate the effectiveness of an AMP. Utilization and actual use data can help determine whether the AMP is meeting its objectives in grazing use. Many grazing systems base pasture rotation dates upon utilization and/or vegetative growth of key forage species.

d. Implement or authorize range projects such as water development, prescribed burns, chemical treatment, and grazing treatment as specified in Table 1-7. Appendix E illustrates typical developments in the field. These projects would conform to the appropriate MFP Step 2 multiple-use recommendations. Those recommendations stipulate proposed restrictions on range improvements which are designed to mitigate adverse impacts to other resources. The following is a summary of the recommendations:

(1) The impacts on wildlife winter range areas and on wild horse distribution would be considered in planning all new water facilities.

(2) Fences in pronghorn antelope winter ranges, deer crucial winter ranges, and known migration routes would be constructed to minimal standards (3-strand wire fence with bottom wire smooth and top two barbed, see Appendix E); monitored annually; and modified if necessary to facilitate reasonable movement by wildlife.

Table 1-7

RANCE OEVELOPMENTS UNDER PROPOSEO ACTION

Allotment	Number of Water Developments: Spring Oevelopments	Reservoira	Other	Acres of Vegetation Treatment: Chemical Treatment or Burn[1/]	Chemical Treatment Only	Total	Other Projects	lnitial Grazing Treatment Recommendation[2/]
Red Creek	2	8		829	1,007	1,836		Three-paature reat-rotation.
Salt Wells	2	2		2,119	0	2,119	Salt Wells Creek Exclosure; Cap Creek Exclosure	Scheduled aystematic rotstion with one pasture reated yearlong.
Pine Mountain	1	4	4 miles pipeline	7,170	0	7,170	Upper Vermillion Creek Exclosure	Scheduled ayatematic rotation with one paature rested yearlong.
Vermillion Creek	0	6		2,526	0	2,526		Open use during winter months; defer late March-April spring use.
Spring Creek	3	3	5 miles pipeline	1,344	772	2,116		Two-pasture rotation during the growing aeaaon; independent winter pasture.
Mellor Mountain	1	1		3,203	48	3,251	Little Bitter Creek Exclosure	Scheduled syatematic rotation for cattle and sheep; lamb in traditional areaa.
Circle Springs	0	1		771	0	771		Utilize in conjunction with Mellor Mountain.
Sugarloaf	1	2		4,565	269	4,834		Scheduled aystematic rotation with one pasture rested during the growing aeason.
Henrys Fork	1	17		23,846	0	23,846	Henrys Fork Bottom Pence	Three two-paature deferred systems apecified in existing AMP aa amended.
Sage Creek	0	2		80	0	80		Utilize in conjunction with Sugarloaf.
Hickey Mountain	0	0		512	0	512		Deferred rotation.
Horseshoe Wash	0	0		538	0	538		Oeferred rotation.
Antelope Wash	0	3		0	0	0		Two-paature deferred rotation in conjunction with Cottonwood Creek.
Crooked Wash	0	0		508	0	508		Deferred rotation.
Hanks	0	0		910	0	910		Deferred rotation.
Cottonwood Creek	0	2		594	0	594		Two-paature deferred rotation in conjunction with Antelope Wash.
Bald Hills	2	1		1,362	0	1,362		Deferred rotstion.
Fourth of July	0	0		0	0	0		Deferred rotation in conjunction with Steamboat Mountain Allotment vis exiating AMP.
TOTALS	13	55		50,877	2,096	52,973		

1/ Acreage is suitable for chemical treatment or prescribed burns.

2/ Crazing treatments are developed through the AMP procesa of consultation with affected livestock operators and other interested parties, such as the Wyoming Game and Fish Oepartment. This cooperative development procesa is further along in some areas than others, resulting in more specific details for some allotments. Full-scale development initiatives are not acheduled until after completion of the EIS. The recommendations listed here muat be considered a starting point for analyais and diacuaaion, rather than a comprehensive proposal.

(3) No more than 10% of the sagebrush within pronghorn antelope winter ranges would be treated within a ten-year period. Treatment areas would be irregular in shape.

(4) Treatment units within VRM Class II areas would not exceed 40 acres in size, no more than 10% of the area would be treated within a ten-year period, and treatment areas would be irregular in shape.

(5) Chemical treatment and applications would be used only where control could be exercised to prevent unwanted destruction of desirable fauna or flora and to prevent transportation of these chemicals to other areas by water or air movement. Sagebrush control areas would be limited to a maximum size of approximately 160 acres and the edge effect would be maximized by following natural contours and terrain features.

(6) Chemical treatment within 100 feet of perennial streams would be prohibited. If riparian vegetation exceeds 100 feet, this buffer would be expanded to make certain this vegetation is not destroyed. Noxious weeds may be treated in accordance with the Rock Springs District noxious weed EA (WY-049-EA82-64).

(7) No more than 20% of the sagebrush within two miles of sage grouse strutting grounds would be treated within a ten-year period.

(8) Grazing of treated areas would be deferred for at least two growing seasons.

In addition to the range developments in Table 1-7, the Bureau proposes construction of an estimated 160 miles of fence. Approximately 50 additional miles of right-of-way fences are associated with State Highway 430 and U.S. Highway 191, and they would be utilized in implementing the proposed grazing program. The right-of-way fence for Highway 430 is proposed by the Wyoming Highway Department. It is anticipated that in the future Highway 191 also would be fenced. The proposal represents the BLM's best estimate of the amount of fencing necessary to manage grazing use in the Salt Wells-Pilot Butte area. These numbers have been provided for the purposes of analyzing the costs, both economic and environmental, associated with the benefits of the grazing management program. Tentative locations of all projects are available for review in the Salt Wells Resource Area Office. Modifications of these proposals are expected during the consultation process that is associated with the development of the AMPs.

e. Utilize future increases in forage production as livestock forage until suspended preference AUMs are restored, then utilize any further increases in forage equitably among livestock and other resources. The original total preference was determined during implementation of the Taylor Grazing Act. Some preference was suspended after the range surveys of the 1960's. Table 1-8 shows the total preference and suspended federal preference (see Glossary) for each allotment. Additional forage after restoration of suspended preference would be utilized on the basis of a supply-and-demand analysis, or as specified in the range improvement policy as it pertains to user contributions.

f. Consolidate the Cottonwood Creek and Antelope Wash allotments. Consolidate the Crooked Wash Allotment with an adjacent area in the Rawlins District. Map 1-2 shows allotment locations.

g. Manage the Fourth of July, Donohoo, and Henrys Fork allotments by the guidelines of existing AMPs. Map 1-2 shows allotment locations. The Donohoo Allotment AMP is characterized by a two-pasture deferred grazing system. The Henrys Fork Allotment is currently grazed under three two-pasture deferred rotation systems. The Fourth of July Allotment has a four-pasture deferred system in conjunction with the Steamboat Mountain Allotment. More complete details concerning the AMPs for these allotments are available for review at the Salt Wells and Big Sandy Resource Area Offices.

2. Take or authorize management actions to maintain current satisfactory conditions on the five "M" allotments.

a. Continue present kind of livestock, season of use, and amount of use. (Table 1-9).

b. Implement monitoring studies in accordance with the Salt Wells Monitoring Plan (Appendix C) to an intensity necessary to detect undesirable change. Should undesirable change become apparent, the allotment would be shifted to the "I" category. Funding for monitoring in these allotments would be second priority behind funding to improve allotments.

Table 1-8

GRAZING PREFERENCE AND SUSPENDED PREFERENCE IN AUMS
FOR ALL ALLOTMENTS IN "I" CATEGORY

Allotment	No.	Grazing Preference	Suspended Preference
Red Creek	4008	5,402	810
Salt Wells	4009	3,080	462
Pine Mountain	4007	10,110	1,516
Vermillion Creek	4003	17,693	4,808
Spring Creek	4011	4,787	717
Mellor Mountain	4027	7,194	1,093
Circle Springs	4001	1,598	652
Sugarloaf	4010	8,010	2,002
Henrys Fork	4012	37,523	6,228
Sage Creek	4000	2,761	1,644
Hickey Mountain	4013	848	170
Horseshoe Wash	4006	796	189
Antelope Wash	4022	572	111
Crooked Wash	4005	2,696	404
Hanks	4019	741	148
Cottonwood Creek	4025	542	106
Bald Hills	4018	1,157	232
Fourth of July	3016	1,368	532
TOTAL		106,878	21,824

Table 1-9

KINO OF LIVESTOCK, LIVESTOCK USE, AND SEASON OF LIVESTOCK USE
FOR "MAINTENANCE" ALLOTMENTS

Allotment	No.	Active Preference in AUMs	Privately Controlled AUMs	Total AUMs	Kind of Livestock*	Season of Use
Rock Springs	3018	107,227	105,879	213,106	C & S	yearlong
Rife	4002	1,661	1,786	3,447	S	5-1 to 10-31
Alkali Creek	4004	2,593	361	2,954	S	5-1 to 6-15
Larson	4014	112	112	224	C & S	6-10 to 10-31
Stag Hollow	4015	378	0	378	S	5-1 to 10-31
TOTAL		111,971	108,138	220,109		

*C-cattle; S-sheep.

Table 1-10

GRAZING PREFERENCE AND SUSPENDED PREFERENCE IN AUMS
FOR ALL ALLOTMENTS IN "M" CATEGORY

Allotment	No.	Grazing Preference	Suspended Preference
Rock Springs	3018	149,040	41,813
Rife	4002	2,139	478
Alkali Creek	4004	3,050	457
Larson	4014	112	0
Stag Hollow	4015	473	95
TOTAL		154,814	42,843

Table 1-11

KINO OF LIVESTOCK, LIVESTOCK USE, AND SEASON OF LIVESTOCK USE
FOR "CUSTODIAL" ALLOTMENTS

Allotment	No.	Active Preference In AUMs	Privately Controlled AUMs	Total AUMs	Kind of Livestock*	Season of Use
Oonohoo	4016	176	0	176	C & S	6-15 to 9-30
Poison Creek	4017	134	0	134	C	5-15 to 7-15
Hisey Hollow	4020	71	0	71		5-16 to 8-31
Cedar Point	4021	162	0	162	C	5-1 to 6-15
Peoples Canal	4026	50	0	50	C	5-1 to 7-15
Circle Bar	4023	120	0	120	C	9-1 to 9-30
Sage	4024	209	0	209	S	2-1 to 2-28
TOTAL		922	0	922		5-1 to 8-31

*C-cattle; S-sheep.

c. Authorize approved range improvement projects by private operators. Appropriated funds may be used, but these allotments would be secondpriority behind "I" allotments. Projects are subject to the same restrictions as the "I" allotments.

d. Allocate future increases in forage production in the same fashion as described for "I" allotments. Table 1-10 shows the total preference and suspended preference for these allotments.

3. Take or authorize actions that would allow custodial management of seven allotments.

   a. Continue present kind of livestock, season of use, and amount of use (Table 1-11), until monitoring or inventory data indicate a change would be appropriate.

   b. Implement monitoring studies in accordance with the Salt Wells-Pilot Butte Monitoring Plan (third priority behind "I" and "M" allotments) to an intensity necessary to detect undesirable change.

   c. Authorize approved range improvements by private operators.

   d. Utilize future increases in forage production as described for the "I" allotments. Table 1-12 shows the total preference and suspended preference for these allotments.

4. Take appropriate administrative actions on all allotments regardless of management category.

   a. Negotiate exchange of use agreements for all allotments except those with a checkerboard land pattern.

   b. Process requests for livestock conversions (e.g., sheep to cattle) following a study of suitability.

   c. Assign maintenance responsibility for range improvements, such asspring developments and fences to the user or users deriving primary benefits from the respective improvement, in accordance with the BLM Final Rangeland Improvement Policy (Washington Office Instruction Memorandum No. 83-27).

   d. Allow approved predator control practices when requested by range users and continue the existing cooperative agreement between the BLM and the U.S. Fish and Wildlife Service.

   e. Eliminate obsolete stock driveway withdrawals.

   f. Allow no surface-disturbing construction of range improvements if high seasonal soil moisture would result in excessive rutting of roads, etc. The period from March 15 to May 1 is typically unsuitable for surface-disturbing activity.

5. Provide yearlong habitat for pronghorn antelope, mule deer, elk, and moose from the federal lands in a prorated fashion, recognizing that private and state lands would supply a proportionate amount of habitat in relation to the total AUMs available. The forage production of private, state, and federal lands is shown in Table 1-13 as a percentage based on the current estimated grazing capacity in AUMs.

   Actual numbers of animals are controlled by the Wyoming Game and Fish Department. The Bureau of Land Management would provide wildlife habitat to the extent possible through its rangeland management program. Actual availability of habitat is discussed in Chapter 2. Habitat can be defined as a combination of basic elements appropriate

Table 1-12

GRAZING PREFERENCE AND SUSPENDED PREFERENCE IN AUMS
FOR ALL ALLOTMENTS IN "C" CATEGORY

Allotment	Number	Grazing Preference	Suspended Preference
Donohoo	4016	220	44
Poison Creek	4017	168	34
Hisey Hollow	4020	160	89
Cedar Point	4021	162	38
Peoples Canal	4026	62	12
Circle Bar	4023	120	0
Sage	4024	260	51
TOTAL		1,152	268

Table 1-13

AUMS BY ALLOTMENT AND OWNERSHIP

Allotment Name	Allotment Number	Licensed Federal AUMs	Privately Controlled AUMs (Unfenced)	Total AUMs	Percent Private AUMs in Allotment
Fourth of July	3016	836	1,047	1,883	55.6
Rock Springs	3018	107,227	105,879	213,106	49.1
Sage Creek	4000	1,117	1,228	2,345	52.5
Circle Springs	4001	946	1,460	2,406	53.3
Rife	4002	1,661	1,786	3,447	60.6
Vermillion Creek	4003	12,903	2,157	15,060	14.3
Alkali Creek	4004	2,593	361	2,954	12.2
Crooked Wash	4005	2,292	0	2,292	0
Horseshoe Wash	4006	607	0	607	0
Pine Mountain	4007	8,600	1,966	10,566	18.6
Red Creek	4008	4,592	2,669	7,261	36.8
Salt Wells	4009	2,618	2,040	4,658	43.8
Sugarloaf	4010	6,008	1,414	7,422	19.1
Spring Creek	4011	4,070	328	4,398	7.5
Henrys Fork	4012	31,295	1,053	32,348	3.3
Hickey Mountain	4013	678	108	786	13.7
Larson	4014	112	112	224	50.0
Stag Hollow	4015	378	0	378	0
Donohoo	4016	176	0	176	0
Poison Creek	4017	134	0	134	0
Bald Hills	4018	925	0	925	0
Hanks	4019	593	10	603	1.6
Hisey Hollow	4020	71	0	71	0
Cedar Point	4021	162	0	162	0
Antelope Wash	4022	461	0	461	0
Circle Bar	4023	120	0	120	0
Sage	4024	209	0	209	0
Cottonwood	4025	436	0	436	0
Peoples Canal	4026	50	0	50	0
Mellor Mountain	4027	6,101	3,061	9,162	33.4
TOTALS		197,971	126,679	324,650	39.0

for existing climate:food, water, cover, and space. Food of suitable quality and quantity must be available year-round, but especially on winter ranges. Water must be available year-round, and especially during summer dry periods. Cover must be provided by vegetation and/or terrain. Various cover types erve different purposes for different wildlife species from providing avenues of escape to providing resting areas, and to providing breeding/calving/fawning/nesting areas, as well as areas which protect the animal from extremes in weather conditions. Spatial limits also exist. The size of a range may limit the number of animals it can support. Spatial requirements may vary with differing food-water-cover combinations, but there is little doubt that there is a limit beyond which crowding becomes detrimental.

There are also several physical factors which help to determine habitat selection. These factors are slope, aspect, temperature, wind, and snow depth. A detailed description of the habitat factors required by the major wildlife species can be found in the Salt Wells URA.

6. Establish four Wild Horse Herd Management Areas (HMAs). The complete Salt Wells and Big Sandy Wild Horse Herd Management Plans (HMAPs) are available for review in the Rock Springs District Office. Map 1-3 shows the locations of these areas. The main points of the plan include:

a. Establish two Wild Horse HMAPs in the Salt Wells Resource Area, Adobe Town and Salt Wells, and implement the management plans for each area. Maintain an average population of 235 head in the Adobe Town HMA and 365 head in the Salt Wells HMA.

(1) Continue to manage the Adobe Town HMA jointly with the Rawlins District, and investigate the opportunity to assign management authority to either the Rock Springs or Rawlins District through a cooperative agreement.

(2) Develop cooperative agreements with private land owners in the Rock Springs and Rife allotments to allow management of a wild horse population of 200 horses on the checkerboard land pattern south of I-80.

b. Establish two HMAs in the Pilot Butte portion of the Big Sandy Resource Area, Divide Basin and White Mountain, and implement the management plans for each area. Maintain an average population of 150 head in the Divide Basin HMA and 100 head in the White Mountain HMA.

(1) Prior to the end of Fiscal Year 83, enter into a cooperative agreement with the Rock Springs Grazing Association to allow management of a wild horse population of 250 horses on the checkerboard north of I-80.

Herd Management Area

Note: All areas except the Salt Wells Creek WHMA extend out of the area.

N

WHITE MOUNTAIN WHMA

DIVIDE BASIN WHMA

SALT WELLS CREEK WHMA

ADOBE TOWN WHMA

Seedskadee National Wildlife Refuge

Flaming Gorge National Recreation Area

Superior

Jim Bridger Plant and Coal

Point of Rocks

Baxter

Rock Springs

Green River

Black Butte Coal

Bitter Creek

Fort LaClede

South Baxter

McKinnon Junction

McKinnon

Continental Divide

Green River

Blacks Fork

Killpecker Creek

Bitter Creek

Little Bitter Creek

Salt Wells Creek

Black Butte Creek

Alkali Creek

Sage Creek

Currant Creek

Henrys Fork

Red Creek

Spring Creek

Vermillion Creek

UINTA COUNTY

SWEETWATER COUNTY

191 372 371 30 80 530 430

T 22 N
T 21 N
T 20 N
T 19 N
T 18 N
T 17 N
T 16 N
T 15 N
T 14 N
T 13 N
T 12 N

R114W R113W R112W R111W R110W R109W R108W R107W R106W R105W R104W R103W R102W R101W R100W R99W R98W R97W R96W

5 0 5 10 15 Miles

Map 1-3
WILD HORSE HERD MANAGEMENT AREAS
Salt Wells - Pilot Butte
Grazing Environmental Impact Statement

7. Treat concentrations of noxious weeds with herbicides and insects such as Mormon crickets with pesticides as specified in environmental assessments WY-049-EA82-64 and WY-044-EA82-12, respectively.

8. Inherent in the Proposed Action and all alternatives are standard operating procedures which would automatically be included. The following are standard operating procedures not mentioned elsewhere in the text:

   a. Grazing Administration:

      (1) Livestock operators would file actual-use reports showing how many and how long cattle grazed in each pasture. Use on the allotments would be supervised by BLM throughout the grazing year.

      (2) Trespass actions would be initiated for any allotment grazed outside the limits described in the permit. The trespass would be eliminated and payment retrieved from those responsible for damage and consumption of forage.

   b. Range Improvements:

      (1) Before construction of range developments and vegetation manipulations, cultural resources would be inventoried and evaluated, and attempts to avoid sites of significant cultural resources and high site density areas would be made. If this was not possible, consultation would be made with the State Historic Preservation Officer and the Advisory Council on Historic Preservation to develop acceptable mitigation strategies. Locations of cultural sites would not be disclosed to the public.

      (2) The District Botanist has examined the proposed locations for vegetation manipulations on maps and concluded that chemical treatment or prescribed burns would not affect any threatened and endangered plant species.

      (3) Fences would be installed according to spacing, height, and other specifications described in the BLM Manual, Section 1737.

      (4) Cattleguards, would be located where fences cross major roads. Generally, cattleguards would be eight-feet wide and twelve-feet long.

      (5) Livestock watering developments would be available and safe for identified wildlife and wild horse needs.

      (6) All water troughs would have wildlife escape ramps which would prevent small animals from drowning.

      (7) The prescribed burning plan or chemical treatment plan would identify procedures, environmental conditions, controls, and coordination responsibilities.

      (8) Projects would not exceed State and EPA pollution standards.

      (9) Weather factors would be monitored for proper conditions prior to allowing burning or chemical application.

      (10) Burning would be done only when ground moisture was sufficient to allow plant growth.

      (11) The patterns of the vegetation manipulation would be designed to blend with the landscape to maintain the natural appearance of the area.

ALTERNATIVE ONE -

CONTINUATION OF EXISTING SITUATION (NO ACTION)

Major Actions

1. The three allotments being managed under AMPs would continue to be operated under existing grazing systems. No new AMPs would be developed.
2. No new boundary or pasture fences would be authorized on public land.
3. No allotments would be combined or divided.
4. No new waters would be developed, but existing reservoirs may be reconstructed.
5. Existing facilities would be maintained under the guidelines of the Range Improvement Policy. Existing range improvements by allotment are shown in Table 1-14.
6. Existing stocking rates, seasons of use, and livestock kind would remain the same (Tables 1-6, 1-9, and 1-11). No AUMs would be added or subtracted from the current licensed use.
7. Obsolete livestock driveway withdrawals would be revoked.
8. No vegetation manipulation treatments would be considered.

Table 1-14

EXISTING RANGE IMPROVEMENTS BY ALLOTMENT

Allotment	Type of Improvement: Number of Reaervoira	Milea of Fence	Number of Springs	Milea of Pipeline	Number of Trougha	Number of Cattleguards
Fourth of July	7	---	---	---	---	---
Rock Springa	17	---	4	---	---	---
Sage Creek		9.0	2		---	---
Circle Springs	---	---	---	---	---	---
Rife	---	---	1	---	---	---
Vermillion Creek	13	---	---	---	---	---
Alkali Creek	---	---	---	---	---	---
Crooked Creek	---	---	---	---	---	---
Horseshoe Waah	---	---	---	---	---	1
Pine Mountain	---	6.5	---	---	---	---
Red Creek	1	5.0	---	---	---	---
Salt Wella	1	1.5	1	---	---	---
Sugarloaf	3	---	3	---	---	---
Spring Creek	2	3.0	2	---	---	---
Henrys Fork	102	114.0	6	13.2	17	11
Hickey Mountain	2	6.0	---	---	---	---
Larson	---	---	---	---	---	---
Stag Hollow	---	---	---	---	---	---
Donohoo	---	2.0	---	---	---	---
Poison Creek	---	---	---	---	---	---
Bald Hilla	1	4.0	2	3.5	1	1
Hanka	1	3.0	---	2.0	---	---
Hiaey Hollow	---	---	---	---	---	---
Cedar Point	---	---	---	---	---	---
Antelope Waah	2	3.5	---	3.0	---	---
Circle Bar	---	---	---	---	---	---
Sage	---	---	---	---	---	---
Cottonwood	---	5.0	---	---	---	1
Peoplea Canal	---	---	---	---	---	---
Mellor Mountain	---	---	---	---	---	---

9. Existing predator and weed and pest control policies would continue.
10. The District would continue to reduce wild horse numbers to the management levels as described in the proposed action (Item 6). Once horses are reduced to desired levels, these animals would be maintained at this level as described in the proposed action.
11. The first two standard operating procedures discussed in Item 8 of the proposed action would ba applied under this alternative.

ALTERNATIVE TWO - EMPHASIZE LIVESTOCK PRODUCTION

This alternative would utilize the criteria in Table 1-1 to group allotments into the improve, maintain, or custodial categories. The allotments would be categorized the same as the proposed action. Those actions inherent in this alternative include the following:

Major Actions

1. Take management actions which would increase livestock production and improve unsatisfactory grazing conditions on the eighteen"I" allotments. Utilize Table 1-5 to prioritize these allotments. Utilize available funds to initiate range improvements in approximately that order.

a. Continue the present kind of livestock, season of use, and amount of use shown on Table 1-6, until monitoring data indicate a change is appropriate.

b. Conduct production inventories on the same allotments as specified in the proposed action.

c. Conduct monitoring studies and utilize data in the same way as described in the proposed action.

d. Implement or authorize range projects such as water developments, prescribed burns, chemical treatment, and grazing treatment as specified in Table 1-15.

In addition to the range developments in Table 1-15, this alternative contains proposed construction of an estimated 162 miles of fence. Approximately 50 miles of right-of-way fences associated with State Highway 430 and U.S. Highway 191 would be utilized in implementing the proposed grazing program.

e. License all future increases in forage production to livestock.

f. Consolidate the Cottonwood Creek and Antelope Wash allotments; and consolidate the Crooked Wash allotment with an adjacent area in the Rawlins District.

g. Manage the Fourth of July, Donohoo, and Henrys Fork allotments by the guidelines of existing AMPs.

Table 1-15

RANGE DEVELOPMENTS UNDER EMPHASIZE LIVESTOCK PRODUCTION ALTERNATIVE

Allotment	Number of Water Developments: Spring Developments	Reservoirs	Other	Acres of Vegetation Treatment: Chemical Treatment or Burn[1/]	Chemical Treatment Only	Total	Other Projects	Initial Grazing Treatment Recommendation[2/]
Red Creek	2	9		2,494	1,297	3,791		Four-pasture rest-rotation.
Salt Wells	2	2		8,680	208	8,888		Scheduled systematic rotation with one pasture rested yearlong.
Pine Mountain	1	4	4 miles pipeline	7,411	D	7,411		Scheduled systematic rotatioo with one pasture rested yearlong.
Vermillion Creek	0	7		2,526	0	2,526		Open use during winter months; defer late March-April spring use.
Spring Creek	3	5	6 miles pipeline	1,364	2,355	3,719		Three-pasture rest-rotation during the growing season; independent winter pasture.
Mellor Mountain	1	1		9,623	479	10,102		Scheduled systematic rotation for cattle and sheep; lamb in traditional areas.
Circle Springs	1	1		819	15	834		Utilize in conjunction with Mellor Mountain.
Sugarloaf	1	2		4,864	269	5,133		Scheduled systematic rotation with one pasture rested during the growing season.
Henrys Fork	0	20		36,659	0	36,659		Three two-pasture deferred system specified in existing AMP as amended.
Sage Creek	2	2		80	0	80		Utilize in conjunction with Sugarloaf.
Hickey Mountain	0	4		678	0	678		Deferred rotation.
Horseshoe Wash	0	0		538	0	538		Deferred rotation.
Antelope Wash	0	5		645	0	645		Two-pasture deferred rotation in conjunction with Cottonwood Creek.
Crooked Wash	0	0		508	0	508		Deferred rotation.
Hanks	0	0		1,024	0	1,024		Oeferred rotation.
Cottonwood Creek	0	4		594	247	841		Two-pasture deferred rotation in conjunction with Antelope Wash.
Bald Hills	2	2		1,617	0	1,617		Deferred rotation.
Fourth of July	0	0		0	0	0		Oeferred rotation in conjunction with Steamboat Mountain Allotment via existing AMP.
TOTALS	15	68		80,124	4,870	84,994		

1/ Acreage is suitable for chemical treatment or prescribed burns.

2/ Grazing treatments are developed through the AMP process of consultation with affected livestock operators and other interested parties, such as the Wyoming game and Fish Department. This cooperative development process is further along in some areas than others, resulting in more specific details for some allotments. Full-scale development initiatives are not scheduled until after completion of the EIS. The recommendations listed here must be considered a starting point for analysis and discussion rather than a comprehensive proposal.

2. Take or authorize management actions to maintain current satisfactory conditions on five allotments containing 2,166,010 acres. Management actions in "M" allotments are the same as the proposed action.
3. Take or authorize actions that would allow custodial management on seven allotments. Management actions in "C" allotments are the same as the proposed action (Item 3).
4. Take appropriate administrative actions on all allotments regardless of categorical management. Administrative actions for this alternative are the same as the proposed action.
5. Provide habitat for big game in the same fashion as that of the proposed action. Any improvement in habitat conditions resulting from management described in this alternative would be used to facilitate livestock management.
6. Wild horses would be managed as provided in the proposed action (Item 6).
7. Treat concentrations of noxious weeds with herbicides and insects such as Mormon crickets with pesticides as specified in the proposed action (Item 7).
8. Standard operating procedures would be the same as listed in the proposed action (Item 8).

ALTERNATIVE THREE - EMPHASIZE WATERSHED, WILDLIFE HABITAT, AND SOIL STABILITY

This alternative would utilize the criteria in Table 1-1 to group allotments into management categories (improve, maintain, or custodial). The allotments would be in the same category as shown for the proposed action (Table 1-4). Those actions inherent in this alternative include the following:

Major Actions

1. Take management action to enhance watershed, wildlife habitat, soil stability, and other multiple uses on the eighteen "improve" allotments.

a. Continue the present kind of livestock, season of use, and amount of use shown in Table 1-6 with the following exception: Elk tend to avoid areas occupied by cattle (Knowles and Campbell 1981). Design the AMPs to not allow livestock on Pine Mountain (Pine Mountain Allotment) and Little Mountain (Sugarloaf Allotment, Salt Wells Allotment, and Red Creek Allotment) until June 30, when the majority of the elk calving has been completed in these areas.

b. Conduct vegetation inventories as funds become available in Henrys Fork (Pastures E and F), Hanks, Sage, and Cottonwood Creek Allotments. These inventories would be accomplished using an approved weight estimate method.

c. Implement monitoring studies. Refer to monitoring discussion in the proposed action (Item 1c).

d. Implement or authorize range improvement projects such as water developments, vegetation treatments, and fences. Because of the importance of crucial winter range for big game animals, restrict water developments to areas outside crucial winter ranges in order to avoid concentrations of summer livestock or wildlife use on these areas. The allotments affected are Mellor Mountain, Vermillion Creek, Salt Wells Creek, Pine Mountain, Red Creek, Spring Creek, Sugarloaf, Henrys Fork, and all the allotments south of the Henrys Fork River. Maps 1-4 and 1-5 show locations of crucial winter ranges for mule deer, pronghorn antelope, and elk. The Wyoming Game and Fish Department has identified no moose crucial winter range in the Salt Wells-Pilot Butte area.

The proposed range projects such as water development, prescribed burns, chemical treatment, and grazing treatment are specified in Table 1-16. These projects would conform to the MFP multiple-use guidelines, which are summarized in the proposed action (Item 1d).

In addition to the range developments in Table 1-16, this alternative includes proposed construction of an estimated 160 miles of fence. Approximately 50 additional miles of

Table 1-16

RANGE DEVELOPMENTS UNDER EMPHASIZE WATERSHED, WILDLIFE HABITAT, AND SOIL ALTERNATIVE

Allotment	Number of Water Developments: Spring Developments	Reservoirs	Other	Acres of Vegetation Treatment: Chemical Treatment or Burn[1/]	Chemical Treatment Only	Total	Other Projects	Initial Grazing Treatment Recommendation[2/]
Red Creek	2	0		829	0	829		Three-pasture rest-rotation.
Salt Wells	2	0		2,119	0	2,119	Salt Wells Creek Exclosure; Gap Creek Exclosure	Open use during winter months; defer late March-April spring use.
Pine Mountain	1	4	4 miles pipeline	7,050	0	7,050	Upper Vermillion Creek Exclosure; Coyote Creek Exclosure	Scheduled systematic rotation with one pasture rested yearlong.
Vermillion Creek	0	5		2,330	0	2,330	Lower Vermillion Creek Exclosure	Open use during winter months; defer late March-April spring use.
Spring Creek	3	0	5 miles pipeline; 1 trough	0	0	0		Three-pasture rest-rotation during the growing season;. independent winter pasture.
Mellor Mountain	1	1		3,023	0	3,023	Little Bitter Creek Exclosure	Scheduled systematic rotation for cattle and sheep; lamb in traditional areas.
Circle Springs	0	0		771	0	771		Utilize in conjunction with Mellor Mountain.
Sugarloaf	1	2		4,565	0	4,565		Scheduled systematic rotation with one pasture rested during the growing season.
Henrys Fork	0	7		16,518	0	16,518	Henrys Fork Bottom Fence	Three two-pasture deferred systems specified in existing AMP as amended.
Sage Creek	0	2		80	0	80		Utilize in conjunction with Sugarloaf.
Hickey Mountain	0	1		512	0	512		Two-pasture deferred rotation.
Horseshoe Wash	0	0		538	0	538		Deferred rotation.
Antelope Wash	0	0		0	0	0		Two-pasture deferred rotation in conjunction with Cottonwood Creek.
Crooked Wash	0	0		508	0	508		Deferred rotation.
Hanks	0	0		0	0	0		Deferred rotation.
Cottonwood Creek	0	0		0	0	0		Deferred rotation in conjunction with Antelope Wash.
Bald Hills	0	0		0	0	0		Deferred rotation.
Fourth of July	0	0		0	0	0		Deferred rotation in conjunction with Steamboat Mountain Allotment via existing AMP.
TOTALS	10	22		38,843	0	38,843		

1/ Acreage is suitable for chemical treatment or prescribed burns.

2/ Grazing treatments are developed through the AMP process of consultation with affected livestock operators and other interested parties, such as the Wyoming Game and Fish Department. This cooperative development process is further along in some areas than others, resulting in more specific details for some allotments. Full-scale development initiatives are not scheduled until after completion of the EIS. The recommendations listed here must be considered a starting point for analysis and discussion, rather than a comprehensive proposal.

right-of-way fences associated with State Highway 430 and U.S. Highway 191 would be utilized inimplementing the proposed grazing program.

Tentative locations of all projects are available for review in the Salt Wells Resource Area Office. Modifications of these proposals could be expected during the consultation process that is associated with the development of the AMPS.

Fence a portion of the Henrys Fork bottom land in conjunction with the Ashley National Forest to enhance waterfowl nesting. Construct exclosures to improve riparian habitat areas that are in a declining condition. The purpose is to afford the areas rest from intensive grazing so that the riparian vegetation would have a chance to grow, the streambanks would become stabilized, and the habitat for wildlife and native plant species would improve. These areas are listed in Table 1-17.

e. Develop AMPs for all allotments. AMPs usually contain a grazing system involving use and rest cycles. Table 1-16 shows the system that theBLM feels would produce the most positive results. Modifications of these proposals are expected following the consultation process and development of the AMPs.

f. Reserve all future increases in forage production for enhancement of watershed, wildlife habitat, and soil stability, except for those increases generated from user-financed range improvements. The AUMs from the latter would be licensed in the manner specified by the range improvement policy.

g. Consolidate the Cottonwood Creek and Antelope Wash allotments. Consolidate the Crooked Wash Allotment with an adjacent area in the Rawlins District. Map 1-2 shows allotment locations.

h. Manage the Fourth of July, Donohoo, and Henrys Fork Allotments under the guidelines of existing AMPs. Map 1-2 shows allotment locations.

2. Take or authorize management actions to maintain current satisfactory conditions of the five "M" allotments.

   a. Continue present kind of livestock, season of use, and amount of use (Table 1-9).

   b. Implement monitoring studies in accordance with the Salt Wells Monitoring Plan (Appendix C) to ascertain whether the allotment remains in satisfactory condition. Funding for monitoring in these allotments would be second priority behind "improve" allotments.

   c. Authorize approved range improvement projects by private operators. Appropriated funds may be used, but these allotments would be secondpriority behind "I" allotments. Projects would be subject to the multiple-use guidelines which are summarized in the proposed action (Item 1d). Construct two exclosures to improve riparian habitat areas that are in a declining condition. The purpose is to afford the areas rest from intensive grazing so that the riparian vegetation would have a chance to grow; the streambanks would become stabilized, and habitat for wildlife and native plant species would improve. These areas are:

Allotment	Creek	General Location
Rock Springs	Bitter Creek	T. 17 N., R. 98 W., Sec. 16
Rock Springs	Salt Wells Creek	T. 18 N., R. 102 W., Sec. 6, and T. 18 N., R. 103 W., Sec. 12

   d. Utilize all future increases in forage production in the same manner as described for "I" allotments.

3. Take or authorize actions that would allow custodial management on seven "C" allotments.

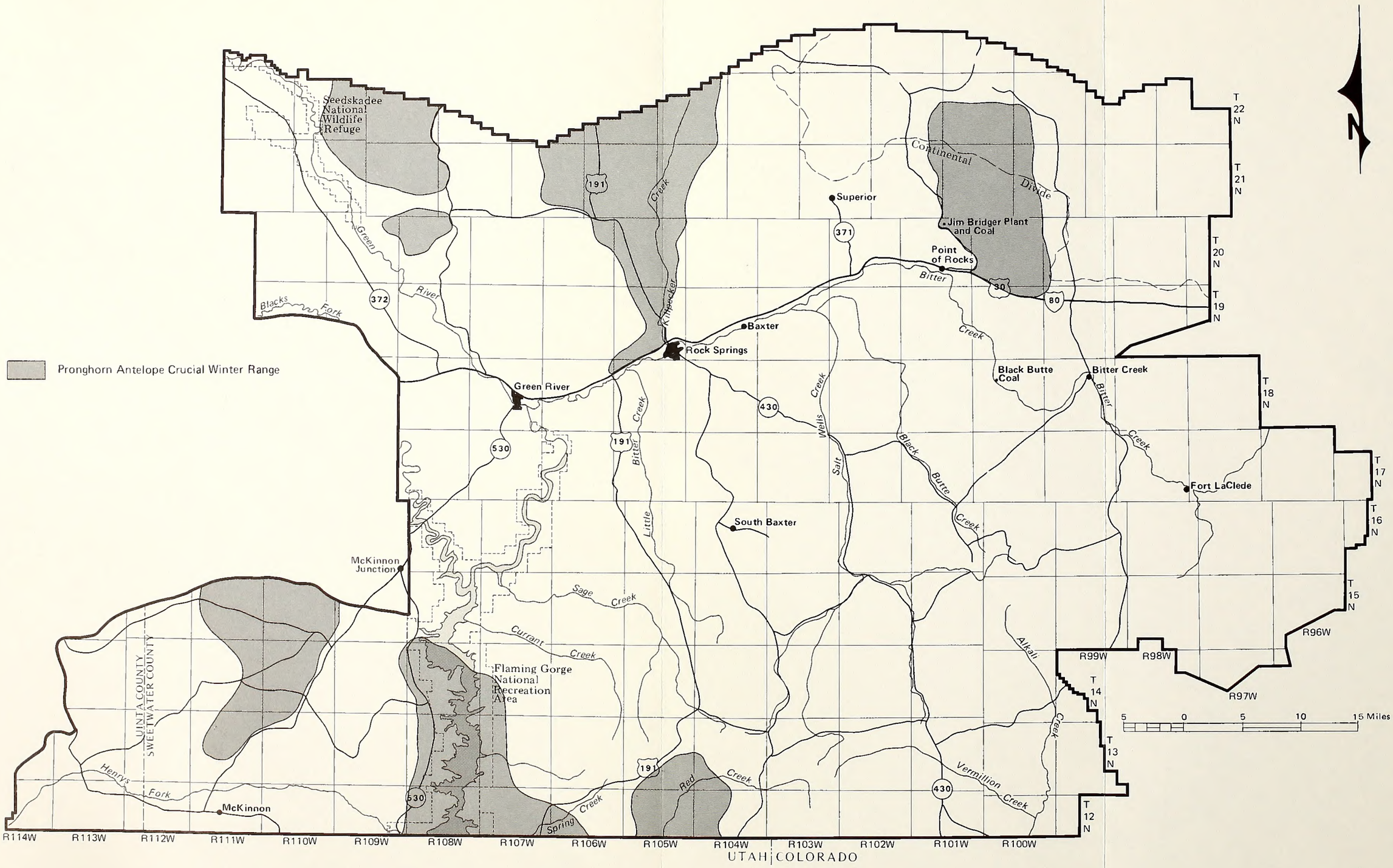
   a. Continue the present kind of livestock, season of use, and amount of use (Table 1-11).

   b. Implement monitoring studies (third priority) in accordance with the Salt Wells monitoring plan (Appendix C) to ascertain that satisfactory conditions continue.

   c. Authorize approved range improvements by private operators, if the improvements are consistent with multiple-use objectives.

   d. Utilize all future increases in forage production in the same manner as described for "I" allotments.

4. Take appropriate administrative actions on all allotments regardless of categorical management.



Map 1-4

PRONGHORN ANTELOPE CRUCIAL WINTER RANGE

Salt Wells - Pilot Butte

Mule Deer Crucial Winter Range

Elk Crucial Winter Range

Seedskadee National Wildlife Refuge

Green River

Blacks Fork

River

Creek

Killpecker

Continental Divide

Superior

Jim Bridger Plant and Coal

Point of Rocks

Bitter

Creek

Baxter

Rock Springs

Green River

Black Butte Coal

Bitter Creek

Bitter Creek

Fort LaClede

Wells

Salt

Creek

Black Butte

Creek

Little

South Baxter

McKinnon Junction

Sage Creek

Currant Creek

Flaming Gorge National Recreation Area

Alkali Creek

Vermillion Creek

Red Creek

Spring Creek

UINTA COUNTY

SWEETWATER COUNTY

Henrys Fork

McKinnon

191

371

372

30

80

430

530

T 22 N

T 21 N

T 20 N

T 19 N

T 18 N

T 17 N

T 16 N

T 15 N

T 14 N

T 13 N

T 12 N

R114W R113W R112W R111W R110W R109W R108W R107W R106W R105W R104W R103W R102W R101W R100W

R99W R98W R97W R96W

5 0 5 10 15 Miles

N

Map 1-5

MULE DEER AND ELK CRUCIAL WINTER RANGE

Salt Wells - Pilot Butte

Grazing Environmental Impact Statement

Table 1-17

PROPOSED WILDLIFE EXCLOSURES UNDER EMPHASIZE WATERSHED, WILDLIFE HABITAT, AND SOIL STABILITY ALTERNATIVE

Allotment	Creek	General Location
Vermillion Creek	Vermillion Creek	T. 13 N., R. 100 W., Sec. 31, and T. 13 N., R. 101 W., Sec. 36
Pine Mountain	Vermillion Creek	T. 13 N., R. 103 W., Sec. 25
Pine Mountain	Coyote Creek	T. 13 N., R. 102 W., Secs. 28, 29
Mellor Mountain	Little Bitter Creek	T. 15 N., R. 104 W., Secs. 20, 21, 28
Mellor Mountain/Salt Wells	Salt Wells Creek	T. 15 N., R. 103 W., Secs. 35, 26
Salt Wells	Gap Creek	T. 14 N., R. 103 W., Secs. 29, 30, 31

a. Negotiate exchange of use agreements for all allotments except those with checkerboard land pattern.

b. Process requests for livestock conversions following a study of suitability. Allow no conversions to sheep use in the following allotments due to big game crucial winter range:Red Creek, Spring Creek, Sugarloaf, Mellor Mountain, Vermillion Creek, Salt Wells, Pine Mountain, Henrys Fork, and all allotments south of the Henrys Fork River.

c. Assign maintenance responsibility to the user or the BLM as specified in the Range Improvement Policy.

d. Allow predator control to continue on public lands following the guidelines presently in effect under the cooperative agreement between BLM and the U.S. Fish and Wildlife Service. "Problem" animals may be removed following an investigation of a "Damage Control Request" (selective rather than overall, or nonselective, control).

e. Eliminate obsolete stock driveway withdrawals.

f. Allow no surface-disturbing construction of range improvements during periods of high soil moisture as specified in the proposed action.

5. Wildlife herd levels would be allowed to expand to the limit of the habitat's potential carrying capacity.
6. All wild horses would be managed as provided in the proposed action (Item 6).
7. The use of herbicides and pesticides is not encouraged, but would be allowed if no other alternative could effectively reduce pest populations, e.g., Mormon crickets. All other means of management control would be investigated and alternatives would be employed where practical. All herbicide and pesticide projects must incorporate wildlife habitat, soil stability, and watershed objectives.
8. Standard operating procedures listed in the proposed action (Item 8) would be applicable under this alternative.

ALTERNATIVE FOUR - LICENSE NO LIVESTOCK USE ON PUBLIC LANDS

The objective of this alternative is to allow the environment to respond to its full potential with a minimum of livestock grazing. A strict "no grazing" alternative is infeasible due to the interlocking land ownership pattern (more than 2 million acres of checkerboard alone); thus, the following alternative represents the largest feasible reduction of livestock grazing within the area.

Major Actions

1. Under this alternative no forage from the public lands would be licensed to livestock operators, but each operator having unfenced privately controlled lands would be allowed to run the recognized stocking rates of their private lands over the entire allotment acreage. As a result only the privately controlled stocking levels which exist today would be allowed in the area. This would necessitate a minimum reduction in current livestock grazing AUMs by 61%. Table 1-13 shows the recognized number of privately controlled AUMs in each allotment. It can be seen that the 324,650 AUMs currently authorized for the entire area would be reduced to 126,697 when federal AUMs are withdrawn. The use of this federal acreage would require an exchange of use agreement. Operators who do not wish to sign such an agreement or who desire to run more livestock on their own land may do so; but the operator must then take actions, such as fencing or herding, to assure that all livestock is kept on private lands.
2. Operators currently utilizing public land attached solely to base property outside the existing allotment boundaries would no longer be allowed to do so. As a result 46 of 62 operators currently utilizing public lands in the area would no longer be allowed to do so.

Table 1-18

NUMBER OF LIVESTOCK OPERATORS IN EACH ALLOTMENT

Number	Allotment Name	Number of Operators [1]	Livestock Operators With Unfenced Land Contained In Allotment
3016	Fourth of July	1	1
3018	Rock Springs	21	6
4000	Sage Creek	1	1
4001	Circle Springs	1	1
4002	Rife	1	1
4003	Vermillion Creek	8	4
4004	Alkali Creek	2	1
4005	Crooked Wash	1	1
4006	Horseshoe Wash	1	0
4007	Pine Mountain	4	1
4008	Red Creek	3	1
4009	Salt Wells	2	1
4010	Sugarloaf	1	1
4011	Spring Creek	2	1
4012	Henrys Fork	24	7
4013	Hickey Mountain	3	1
4014	Larson	1	1
4015	Stag Hollow	1	0
4016	Donohoo	1	0
4017	Poison Creek	1	0
4018	Bald Hills	1	1
4019	Hanks	1	0
4020	Hisey Hollow	1	0
4021	Cedar Point	1	1
4022	Antelope Wash	2	0
4023	Circle Bar	1	0
4024	Sage	1	0
4025	Cottonwood Creek	1	0
4026	Peoples Canal	1	1
4027	Mellor Mountain	2	2
	TOTALS [1]	92	35

[1] Many livestock operators run livestock in more than one allotment; thus the total shown here is greater than the actual number of livestock operators in the Salt Wells-Pilot Butte area. The same is true for operators with privately controlled lands.

Table 1-18 shows the number of current operators in each allotment and the number which would retain some use after the implementation of this alternative. Grazing permits for these individuals with no privately controlled open range would be cancelled. Nine of the 30 allotments would be closed to livestockgrazing (Table 1-18).

3. Range projects would be authorized only if compatible with other resource objectives.
4. No AMPs would be developed. Existing AMPs would be dropped.
5. Obsolete stock driveway withdrawals would be revoked.
6. Livestock conversions would be allowed at authorized conversion rates if the change appears compatible with other resource objectives.
7. Limited predator control on sheep ranges would be allowed.
8. Wildlife would be allowed to expand to the carrying capacity of their habitat.
9. Horse use would be the same as the proposed action (Item 6).
10. Standard operating procedures concerning range improvements, outlined in the proposed action (Item 8), would be applicable under this alternative.

INTERRELATIONSHIPS

BLM Planning System

The Bureau's land use planning documents for the Salt Wells and Big Sandy planning units were updated and revised from 1980 to 1982 in accordance with BLM Manuals 1601-1608. The planning system provides guidance for the uses and management of public lands. This EIS is part of the process leading to range management decisions for federal lands in the subject planning units. (See the Development and Implementation of Proposed Action and Alternatives section of this chapter for a description of the relationship between the planning and environmental processes.)

Activity plans for other resource programs in the respective planning units either have been or are being developed to implement the respective MFP decisions for watershed, wild horses, wildlife habitat, and timber sales. Activity plans have also been developed to provide special protection to Areas of Critical Environmental Concern (ACECs). Environmental assessments have been prepared to analyze the impacts of mineral development (oil and gas, coal, and sodium), and the district environmental impact statement on wilderness study areas (WSAs) includes an analysis of WSA

management recommendations for the Salt Wells-Pilot Butte area. A draft EIS has been prepared to address the impacts of Chevron's proposed phosphate fertilizer plant and associated facilities south of Rock Springs. The relationships of the above resource management recommendations and decisions to the proposed range management program may be found throughout this EIS. Refer to Table 1-5 for the Bureau's analysis of resources by allotment.

Impacts of Planning Decisions on Grazing

The BLM's impact analysis indicates that development of some resources in the Salt Wells-Pilot Butte area, per land use planning decisions, would affect the grazing program. Those interrelationships with the alternatives, including the proposed action, are discussed below.

Forestry

The information in this section is based largely on data from the environmental assessments (EAs) associated with the two recent timber sales and the sale of personal use forest products. These EAs (WY-044-EA82-7; WY-044-EA80-36; and WY-044-EA82-54) are available for review in the Salt Wells Resource Area Office.

Proposed Action. The forestry program would result in a slight short-term increase of livestock forage as some timber stands are opened. However, these benefits would be negated in the long term when trees revegetate the site. More important than any residual forage changes is the activity generated by the people and equipment engaged in harvesting forest products. During the peak of the firewood cutting season, both Little and Pine mountains are heavily used by firewood cutters. While cattle are not as sensitive to such activity as wildlife, these animals would tend to move away from unusual high levels of human presence. As a result the forage of these forested areas becomes more difficult to utilize. This problem would become more acute as demand for forestry is currently underway, oil shale is also located throughout much of the area (BLM 1983). The cumulative impact analysis section (Chapter 2) includes the acreage disturbed by mineral development products increase.

Furthermore, when the affected allotments are utilized pasture by pasture, the forage produced on these mountains would become more significant to the management of those allotments. This forest use-livestock use conflict is expected to increase.

Alternatives to the Proposed Action. The impacts discussed in the proposed action are appropriate for the alternatives. However, the License No Forage on Federal Lands Alternative would reduce stocking rates to the extent that the acreage affected by the forestry program would not be needed for the grazing program. Conversely this conflict would be most acute in the Emphasize Livestock Production Alternative.

Mineral Resources

Exploration and development of minerals also impacts the livestock program of the area, but is not readily affected by the grazing program. BLM's proposed development of minerals in the area is discussed and analyzed in several assessments available for review in the Rock Springs District Office, including the Sodium Mineral Development Environmental Assessment (EA); Big Sandy/Salt Wells oil and gas EA; the Salt Wells and Big Sandy Coal Decision brochures; and the Sand Butte and the Beans Spring, Table, and Black Butte Creek coal preference right lease application EAs.

The area contains numerous coal, oil and gas, oil shale, and trona deposits. Coal is produced from underground and strip mines; trona through underground mines and solution mining (*in situ*); and oil and gas through surface drilling. Oil shale development may be in situ or by surface methods. Associated support functions such as rail spurs, power or mineral processing plants, and access roads are common in the area.

Coal mining activities take place on the Rock Springs Uplift, while sodium (trona) mining occurs west of Green River in a large trona deposition area within the Green River Basin. Activities related to oil and gas drilling are taking place throughout the area. While no mining and processingas of 1980.

Proposed Action. Mineral exploration and development affects the grazing program through increased activity and actual disturbance of acreage. The adverse effects of human activity are discussed in the forestry section. The acreage projected to be disturbed (reclaimed and not reclaimed) through 2000, as well as AUMs lost from the forage base, are discussed in the cumulative impact analysis section. In general

these disturbances are short-term issues; in the long term, most of these areas would be reclaimed, per the Surface Mining Reclamation and Control Act and other reclamation legislation. The conflict could be expected to escalate in the near future, with more mineral development. This would be especially evident should coal be leased and mined as proposed or oil shale development begin. The most significant impacts may occur in the Salt Wells Allotment if the Beans Spring Project coal leases are issued. The Vermillion Allotment would be significantly affected if the Pio Tract coal is sold in 1984. The Rock Springs Allotment is also affected by coal development, but its large size tends to prevent the impacts from becoming significant in relationship to the coal development impacts on smaller allotments.

Alternatives to the Proposed Action. The mineral program would retain its own progression regardless of the grazing program. This conflicting land use would be most significant in reducing the benefits of the Emphasize Livestock Production and the Emphasize Watershed, Wildlife Habitat, and Soil Stability alternatives. This conflict would be least significant in the License No Forage on Federal Lands Alternative, since ample forage would be available for this reduced stocking rate. In the Continuation of Present Situation Alternative, any decreases in forage could cause a temporary decrease in active grazing use.

Adjacent BLM Areas

The Pilot Butte portion of the Big Sandy Resource Area (analyzed with the Salt Wells Resource Area in this EIS) is bounded on the north by the remainder of the Big Sandy Resource Area. The Bureau prepared a grazing environmental statement on the Sandy area in 1978, and the subsequent decisions have been implemented.

The Salt Wells Resource Area is bounded on the south by the Little Snake Resource Area of Craig, Colorado, District, and the Diamond Mountain Resource Area of the Vernal, Utah, District. The Salt Wells-Pilot Butte area is bounded on the west by the Kemmerer Resource Area, which is also a part of the Rock Springs District, and on the east by the Divide Resource Area of the Rawlins District. Many livestock operators using federal range lands in the Salt Wells-Pilot Butte area also run livestock on federal lands in one or more of the adjacent BLM areas. A grazing management EIS has been prepared for the Diamond Mountain Resource Area, and an EIS is scheduled for 1985 in the Little Snake Resource Area. The Kemmerer Resource Area currently is engaged in the Resource Management Planning (RMP) process which will include grazing management, and the Rawlins District is preparing a grazing environmental impact statement on the adjacent Divide Resource Area.

U.S. Forest Service

In 1977 the Ashley National Forest completed a final environmental statement and management plan for the Flaming Gorge National Recreation Area (NRA). The Wyoming portion of the NRA lands are within the Salt Wells-Pilot Butte area. Livestock grazing within the NRA is administered by the BLM, with the Forest Service providing guidance and assistance in preparing management plans that provide protection for the NRA's recreational values. Management of certain recreation complexes and points of interest restrict or prohibit the movement of livestock, while the distribution, season of use, and management of livestock are coordinated to avoid conflicts with the NRA's recreational visitors (Department of Agriculture 1977).

Most of the grazing in the Wyoming part of the NRA occurs during the winter. The NRA within Sweetwater County includes small portions of five grazing allotments and furnishes an estimated 1,850 AUMs for cattle and 1,900 AUMs for sheep. Eighteen livestock operators run livestock in the NRA.

The Salt Wells Resource Area is also adjacent to a small portion of the Wasatch National Forest, and the Bureau cooperates with Forest personnel on various management actions.

U.S. Fish and Wildlife Service

Part of the Seedskadee National Wildlife Refuge, which is administered by the U.S. Fish and Wildlife Service (USFWS), is within the Salt Wells-Pilot Butte area. The refuge provides nesting and seasonal habitat for a wide variety of migratory birds, including raptors, waterfowl, marsh and waterbirds, and shorebirds, gulls, and terns

(Seedskadee National Wildlife Refuge 1979 and 1980). The refuge boundaries are fenced; however, portions of the refuge are grazed periodically by livestock to improve the forage resource for wildlife. USFWS administers this program, with leases going to the highest bidder on a case-by-case basis.

Per a cooperative agreement with the BLM, the Fish and Wildlife Service implements predator control measures on public lands.

The BLM is required to coordinate and consult with the USFWS in the following environmental situations:

—When a proposed or implemented action would or could involve any stream or body of water and affect a fish and wildlife resource (*Fish and Wildlife Coordination Act;* 16 *U.S.C.* Sec. 661 *et seq*).

—When a proposed or implemented action would or could involve an eagle, its nest, and/or its habitat (*Bald and Golden Eagle Act of 1969;* 16 *U.S.C.* 668-668c).

—When a proposed or implemented action would or could involve an endangered/threatened species and/or its habitat (*Endangered Species Act;* 16 *U.S.C.* Sec. 1531). The Bureau requests a list of threatened and endangered species from the USFWS. The Bureau then conducts a biological assessment to determine if any species may be affected. Formal consultation with USFWS under Section 7 of the Endangered Species Act is conducted by the Bureau in "may affect" situations, and USFWS provides a biological opinion.

Bureau of Reclamation

The Bureau of Reclamation administers withdrawn lands in the area adjacent to the Green River. These lands were withdrawn in support of Upper Colorado River reservoir projects; e.g., Flaming Gorge Reservoir. The BLM administers the grazing program on these lands.

Soil Conservation Service (SCS)

The SCS conducts soil surveys on private land and, as a cooperator in the national cooperative soil survey program, assists the BLM in the design and quality of soil surveys. SCS worked with the BLM and SaLUT in the third-order, semi-detailed surveys that included the Salt Wells-Pilot Butte area. The inventories (SaLUT 1979 and 1981) support BLM programs that assess and plan the use of land resources, especially range vegetation.

Wyoming Department of Agriculture

The department assures orderly development of the resources necessary for agricultural production. It is responsible for adequate insect, weed, and plant disease and predator control programs; and for maintaining strict chemical and bacteriological standards in the state (*Environmental Pesticide Control Act* of 1973).

The *Wyoming Weed and Pest Control Act* of 1973 established county weed and pest control districts. Each county board is responsible for implementation of effective control programs that would reduce agricultural economic losses to noxious weeds and pests. The boards may prescribe minimal treatment on lands within the state, regardless of land ownership. In 1976 the Wyoming Department of Agriculture and the Sweetwater and Uinta county districts conducted systematic weed surveys in the Salt Wells-Pilot Butte area. In 1982 the State of Wyoming prepared (with BLM financing) an environmental assessment on designated noxious weed control in the Rock Springs District, and the District will implement a program based on decisions made following the environmental process.

Wyoming Game and Fish Department

Through a memorandum of understanding, the BLM and the Wyoming Game and Fish Department work cooperatively to improve and maintain the wildlife resource. The department, under the direction of the State Game and Fish Commission, is charged with the management of the state wildlife resource, including the responsibility "to provide the public with optimum benefits from the available wildlife resource" (Wyoming Game and Fish Department 1976). The department administers wildlife habitat on state lands and works with private landowners who desire to improve wildlife habitat on their lands. The department establishes wildlife population

numbers in the state and implements harvest programs designed to meet those numbers. The BLM is responsible for maintaining wildlife habitat on public lands.

Wyoming Commissioner of Public Lands

The Wyoming Commissioner of Public Lands is responsible for the administration of lands owned by the State of Wyoming. The Board leases the lands for grazing to livestock operators for a ten-year term. The lessee is considered the guardian of the land, which is not open for public access unless an easement is approved by the Wyoming State Land Board and recorded in the Office of the Commissioner of Public Lands. Free use of state lands is not permitted and vehicular traffic is prohibited unless on a public access road.

A lease of state land provides the lessee the right to make any improvements necessary for the operation of the grazing lease. The lessee may sublease the land provided prior Land Board approvals have been obtained. The Board retains the right to lease the lands for other purposes such as timber harvest and mineral extraction. In addition, the Board may grant rights-of-way across state lands with the right of ingress and egress (see Glossary).

Wyoming State Engineer

The Wyoming State Engineer is responsible for the appropriation and administration of the water resources in Wyoming. Applications to appropriate water must be filed with the State Engineer. The applications must be approved by the State Engineer and a state permit issued prior to undertaking proposed water developments. Water impoundments require a review by the State Engineer prior to the issuance of a state permit for impoundment. The State Engineer can deny water permits where they would conflict with other existing water rights or would be harmful to public interests. The State Engineer also issues temporary use permits for unappropriated water. The BLM files for water rights under a cooperative agreement with the State Engineer's Office.

Wyoming Highway Department

The Wyoming Highway Department is responsible for obtaining highway rights-of-way and for construction of highways across public lands. The department also obtains permits for mineral materials used in construction and maintenance of the highways. Some of the highway rights-of-way are fenced by the department, and those fences impact livestock, wildlife, and wild horse movements. The Bureau plans to incorporate some of that fencing into the Salt Wells-Pilot Butte range improvement considerations.

Wyoming Oil and Gas Commission

The commission has the authority to develop state minerals on lands with federal ownership. The BLM cannot deny use of the surface or access to state minerals. Such developments would cause surface disturbance and thus impact the livestock grazing in the affected allotments.

Wyoming Department of Environmental Quality

The Wyoming Department of Environmental Quality (DEQ) has authority relating to air quality, solid wastes, water quality, and mining and mine land reclamation. Under provisions of the *Surface Mining Control and Reclamation Act* (SMCRA), the DEQ Land Quality Division administers and enforces the provisions of surface mining and reclamation act, including the mitigation of impacts on livestock grazing and wildlife habitat. The Air Quality and Water Quality Divisions would be involved in assessing potential impacts associated with vegetation treatments and, with the Land Quality Division, assessing impacts of other range improvements.

National Advisory Council on Historic Places and Wyoming State Historic Preservation Officer

Section 106 of the *National Historic Preservation Act* of 1966 as amended (16 U.S.C. Sec. 470 et seq.) requires that the President's advisory council have an opportunity to comment on any undertaking which could affect cultural resources on, or eligible for inclusion on, the National Register of Historic Places.

Intensive field inventories (Class III) of the specific sites that would be affected by proposed range management projects would be conducted by the Bureau. Should cultural properties be identified, every effort would be made to avoid adverse effects to the resource. Where that is not possible, the BLM would consult with the State Historic Preservation Officer (SHPO) and the National Advisory Council on Historic Places, per the January 14, 1980, programmatic memorandum of agreement by and between the BLM and the Council, to determine the mitigation measures appropriate for lessening the adverse impacts (BLM Washington Office Instruction Memorandum 80-369, March 14, 1980).

Private

The Rock Springs Grazing Association and Union Pacific Railroad are the principal landowners of most of the private checkerboard lands. Nonfederal landowners control 53% of the checkerboard lands.

The Bureau is working with the grazing association on various grazing proposals, and also works closely with Union Pacific Railroad subsidiaries on concerning projects on the checkerboard lands. Upland Industries, a subsidiary of the Union Pacific Railroad Company, is concerned with the surface uses of the railroad's checkerboard holdings. Champlin Petroleum Corporation, also a subsidiary of the Union Pacific Railroad Company, handles oil and gas development on the railroad lands. Rocky Mountain Energy, still another subsidiary of the Union Pacific Railroad Company, handles leasing and development of minerals other than oil and gas.

County

Most of the area has been zoned as agricultural lands by the Sweetwater and Uinta county planning and zoning commissions. No significant changes in zoning are anticipated.

SELECTION OF THE PREFERRED ALTERNATIVE

The Bureau has selected the proposed action as the environmentally preferred alternative for the Salt Wells-Pilot Butte grazing management program. In comparing the alternatives (Table 1-19), the proposed action provides sufficient benefits to the livestock industry, as well as benefits to the watershed and wildlife programs, without undue degradation of other resource values.

Table 1-19

COMPARISON OF THE ALTERNATIVES INCLUDING THE PROPOSED ACTION

	Proposed Action	Continuation of the Existing Situation	Emphasize Livestock Production	Emphasize Watershed, Wildlife Habitat, and Soil Stability	License No Livestock Use on Public Lands
Forage Production on Public Lands For Livestock (AUMs)	+ 12,488	- 9,180	+ 16,577	- 151	- 197,971
Proposed Range Improvements					
Water Developments (Number)	70	0	83	32	0
Vegetation Treatments (Acres)	52,973	0	84,994	38,843	0
New Fencing (Miles)	160	0	162	160	0
Benefit/Cost Ratio	1.447	0.888	1.333	1.271	NA
Long-Term Effects					
Soil Erosion Rates	Reduction	Increase	Slight Increase	Reduction	Slight Reduction
Sediment Rates	20% Reduction	10% Increase	15% Reduction	30% Reduction	18% Reduction
Aquatic Habitat	Improvement Overall	Continued Degradation	Stable to Slight Decrease	Improvement Overall	Improvement in Localized Areas
Big Game Numbers					
Antelope	+ 409	- 259	- 233	+ 744	+ 15,967
Deer	+ 382	- 493	- 3	+ 571	+ 6,504
Elk	+ 41	- 67	- 4	+ 64	+ 1,109
Adverse Effects On Cultural Resources	Continued Moderate	Increased	Increased	Continued Moderate	Decreased
Recreation Resources Hunter-Days	+ 389	- 475	- 66	+ 619	+ 9,705
Regional Income (in Dollars Per Annum Compared to Present)	+ 507,700	- 494,700	+ 563,700	+ 108,200	- 6,854,800
Employment Opportunities	+ 6	- 7	+ 6	+ 3	- 53

CHAPTER 2

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter contains the description of the affected environment and the impacts (socio-economic and environmental) associated with the proposed action and alternatives. Only those resources or use of resources that would be significantly affected by the proposed grazing programs are discussed. Resources which are not considered to be significantly impacted by the proposed action, such as air quality, are not discussed. The Bureau determined that flood-plains, wild and scenic rivers, wetlands, the sole source of drinking water, and prime and unique farmlands would not be affected, and no further analysis has been made. Only those threatened and endangered species, wilderness values, and areas of critical environmental concern (ACECs) which are specifically mentioned, are considered to have potentially significant impacts.

Climate and topography would not be affected by the proposed action and alternatives, but are discussed briefly because they could affect the grazing management program. The primary data sources utilized in this chapter are the Bureau's Salt Wells and Big Sandy planning documents, which are available for review in the respective resource area offices.

ASSUMPTIONS AND ANALYSIS GUIDELINES

1. When short-term and long-term impacts are discussed, short term generally is five years and long term is 30 years.
2. All allotments in the proposed action; Emphasize Livestock Alternative; and Emphasize Watershed, Wildlife Habitat, and Soils Stability Alternative are categorized as M, I, or C. Since nearly all the projects pertain to "I" allotments, the impact analysis is also largely concerned with these "I" allotments; thus, all impacts, unless otherwise specified, pertain to "I" allotments. "M" and "C" allotments are considered to be in satisfactory status and are expected to remain satisfactory except for specified local areas.
3. All projections of resource gains associated following implementation of the project, not on the completion of the EIS).
4. When impacts of alternatives to the proposed action are analyzed, only those impacts which differ from the proposed action analysis are discussed.
5. The impacts concerning forage production assume near average climate. Either drought or abnormal rainfall would significantly change the production estimates.
6. When there are information gaps (e.g., data about exact locations of projects are not known), a worse-case environmental analysis is described in the text.

CLIMATE

While climate would not be affected by the grazing program, it is an important factor to be considered in all activity plans. Basically the area may be described as having a semiarid, continental climate.

Temperatures range from -20° F. to 90° F. The growing season is short. The average frost-free period in the city of Green River is about 100 days. Since Green River is one of the lower elevation areas locally, it may be assumed this figure is a high estimate for the area on the whole.

Precipitation ranges from 5 to 20 inches in the area, depending upon location and elevation. However 7 to 10 inches may be considered a reasonable average for the area in general. Evapotranspiration levels greatly exceed precipitation during the growing season.

The prevailing wind blows from the west-southwest. The area is often subject to gusty winds.

TOPOGRAPHY

The topography of the area is significant because it affects the types of management which may be implemented. Each grazing allotment has a unique topographic layout requiring an equally unique management plan.

The Salt Wells-Pilot Butte area has a wide variety of topographic features. They range from mountains, foothills, and valleys to rolling hills, rims, and basins. Elevations vary from 6,040 to 9,550 feet within the area and to a certain extent determine the severity of impacts on different resources. The area is made up of various topographic units; i.e., Rock Springs Uplift, Green River Basin, Red Desert, Flaming Gorge, etc. These are described in further detail in the Salt Wells and Big Sandy unit resource analyses (URAs).

FORESTRY

Affected Environment

The commercial forest land is restricted largely to the tops of Little and Pine mountains. Allotments affected include Pine Mountain, Salt Wells, Sugarloaf, and Red Creek. A small scale commercial cutting program is in effect in both areas. In addition local firewood cutters annually harvest approximately 750,000 board feet of fuelwood and corral poles. In 1982 approximately 400 individuals purchased forest product harvest permits.

Environmental Consequences

Alternatives Including Proposed Action

The forestry program would be only slightly affected by grazing. Livestock, under some circumstances, would browse or trample tree seedlings. Under current management this is not considered a significant problem. However, if livestock are pastured in forested areas as part of a grazing system, problems with livestock could develop while young trees are regenerating in clearcut areas. Such problems could develop under the Emphasize Livestock Production Alternative and, to a lesser extent, under the proposed action and the Emphasize Watershed, Wildlife Habitat, and Soil Stability Alternative. No impact is expected under the Continuation of the Existing Situation and the License No Livestock Use on Public Land alternatives.

SOILS

Affected Environment

Soil is the basic resource upon which plant and animal life is ultimately dependent. However, soil cannot be considered a constant; it is a dynamic system which changes in relation to its surroundings. All soil originates from parent material (see Glossary). The soils which are found on a given site today were formulated on the basis of five major factors that control soil development. These are the type of parent material, climate, topography, living organisms and time.

Since the area has basically an arid climate, its soils in general lack profile development (see Glossary) and, as a result, lack soil structure and are prone to be highly susceptible to erosion. The soils in this area are especially dependent on vegetative cover to remain in place and continue the geologic process of soil development. Vegetative cover acts as a buffer between soil and its surrounding environment. The cover on the soil surface, as well as the root system, assists in maintaining the present as well as developing the future characteristics of that soil. Increased organic matter, over time, will enhance beneficial soil properties; i.e., infiltration, aeration, nutrient availability, and structure. Furthermore, vegetative cover prevents raindrops from impacting directly on the soil surface and causing erosion.

The information in this section is based upon the third order soil surveys conducted by SaLUT (1979 and 1981). The methodology used to gather the soils information concerning the soils of the area is available for review in the BLM Rock Springs District Office.

Soils of the Salt Wells-Pilot Butte area have formed in residual material weathered from bedrock, colluvium, alluvium, basin deposits, outwash, wind-transported sediments, and debris from landslides and slumps. The soils in the area are generally light-colored, alkaline, and have poorly-developed horizons (see Glossary). Typically the soils exhibit weak soil structure and tend to be well drained, except for those that

occupy the alluvial valley floors. Shallow, coarse-textured, stony soils are common on open benches. In many places deep, stone-free soils in association with stabilized dunes occupy partially protected slopes below ridges.

Sandy loams, silt loams, and silty clay loams have been weathered from very fine sandstone, siltstone, and mudstones. Considerable erosion has occurred in the past due to the sparse vegetation and wide variation in precipitation intensities in the area over the years. Wind erosion has created small dune areas of well-sorted fine sands (Soil Conservation Service 1976).

Drainages and stream bottoms have accumulated silts and clays in alternate layers of varying texture. These alluvial soils are more resistant to wind erosion, but are very susceptible to head cutting and bank cutting by water movement. Consequently, the major washes have precipitous banks several feet deep which undercut and slump during periods of runoff. Soluble salts are evident in these soils. Sodium ions cause the soil mineral colloids to disperse; thus, the soil develops a tight, impervious soil structure (Buckman and Brady 1969). These soils with impervious structure (see Glossary) have a greatly reduced water infiltration rate.

Sandy soils dominate the ridge areas. These areas often contain coarse gravels from old erosion surfaces. Water infiltration is very rapid and water holding capacity is low. The surfaces of these soils, when disturbed, yield to wind erosion very easily. As a direct result of the low amount of clay and organic material indigenous to these soils, the nutrient supply and storage capacity of these soils is low.

The playa lake areas have sandy clay loams at the surface grading to higher clay contents as depth increases. The profiles (see Glossary) have been dispersed by high accumulations of salts.

In order to visually express the range of soils in the area, a general soil map (Map 2-1) has been developed. The following legend is based upon interpretative grouping of the third-order soil surveys (SaLUT 1979 and 1981) with respect to soil characteristics, vegetation types,and topography. Each unit shown in Table 2-1 includes one or more representative soil units from the survey.

Table 2-1

GENERAL SOILS MAPPING UNITS

General Soil Group	Group Characteristics
I	Shallow to deep; loamy and/or sandy soils. These soils generally have a pH of < 8.5. The dominant vegetation types are sagebrush and desert shrub. Representative Order III survey units - 451, 452, and 436.
II	Deep alluvial soils associated with riparian areas. These soils have a pH of > 8.5 and are characterized by high clay content and alkalinity problems. The dominant vegetation types are greasewood and saltbush. Representative Order III soil survey units - 455, and 433.
III	Deep alluvial soils associated with densely vegetated riparian areas. These soils have a pH of < 8.5 and are predominantly vegetated by willows. Representative Order III soil survey unit - 733.
IV	Sandstone outcrops with pockets of deep sandy soils. The dominant vegetation types are juniper and mountain mahogany. Soil erosion can be a problem with these soils if the surface is devoid of vegetation and subjected to wind. Representative Order III soil survey unit - 476.
V	Shallow to deep skeletal soils located on mountain tops and steep north-facing slopes. Dominant vegetation types are conifer (except juniper) and mixed aspen stands. Representative Order III soil survey unit - 702.
VI	Badland, sand dune, and miscellaneous land features. These units generally support no vegetation. Representative Order III soil survey units - 460 and 801.

Environmental Consequences

The lack of soil development and the characteristic high levels of soluble salts in this area lead to an overall soil character which can be viewed as highly erodible. The erodibility characteristics express the low probability of a soil to remain a viable growth medium for desired vegetation communities after continual removal of surface vegetation. Soil surface impacts from wind, precipitation, and biological forces (man, animal) are muted by the type and amount of plant biomass (see Glossary). Once inter-relationships between soil and its vegetative cover are changed, the character of the soil will change. Negative influences relating to the soil/biomass relationship will minimize soil physical properties, leading to accelerated soil loss through erosion.

Proposed Action

In arid regions, livestock grazing can be compatible with soil protection. When grazing management is related to the soil resource, it is clear that of the five major factors which control soil development only "living organisms"; i.e., vegetative cover; can be managed. The proposed action puts all improve (I) allotments either in a deferred grazing or alternate deferred grazing system. Both systems are predicated on increasing forage; i.e., biomass. Over time the soil resource would benefit through the management set forth in the proposed action by increasing water intake and improving soil structure characteristics. The proposed action for the maintain (M) and custodial (C) allotments generally would not affect the soil resource. Table 1-5 rates the relative soil erosion and necessity for management to address the problem on an allotment basis. All "M" and "C" allotments fall into the slight or moderate group, thus the existing stocking levels and use patterns are not considered to be the most limiting soil stability factor.

The overall short-term effect on "M","I", and "C" allotments would be minimal due to the slow reaction potential of soil. However, increased vegetative cover and reduced soil movement in active erosion areas would lead to a generalized long-term effect would be first evident as a reduction in upland erosion, which would lead to a reduction in overall sediment transport in the area. Quantification of changes in erosion rates with respect to the proposed action and the alternatives is not feasible; for accurate quantification of erosion rates, site-specific soil surface information and precise slope data are required. The available data (SaLUT 1979 and 1981) are not finite enough to produce credible erosion rates in the Salt Wells-Pilot Butte area, or changes in the rates that would result from management.

Burning and Herbicides

The prescribed burning or herbicide spraying treatment areas are located in either loamy or sandy loam soils of less than 25 percent slope. These soils have the greatest potential for increased forage due to their high vegetation production capabilities. Generally burning effects on soil would differ, depending on the temperature and length of burn period. The most beneficial fire is a low temperature fast burning fire. By removing surface vegetation quickly at low temperatures, the soil will retain valuable organic material (roots, soil waxes, and resins), thus aiding in surface stability during the period prior to new cover establishment.

Herbicide control of undesirable vegetation is less harmful to soil than burning; in essence, dead vegetation remains on the soil surface, thus giving additional wind protection at the soil surface. General burning and/or herbicide spraying would induce short-term soil loss, but the long-term benefit of increased surface biomass would outweigh the initial soil loss.

Continuation of Existing Situation

Due to the soils' slow reaction time (refer to the previous discussion), there would be no appreciable effect to the soil resource on a short-term measurement. Generally the soil condition and production capabilities would decline over the long term due to gradual reduction in vegetative cover in site-specific, high grazing-density areas (riparian and loamy soil areas). Upland soils probably would not be significantly affected.

Emphasize Livestock Production

This alternative would result in impacts similar to the proposed action; however, the grazing intensity resulting from the increased stocking rates, the increased number of range improvements, etc., would disturb more soil. It is expected, therefore, that this alternative would result in slightly more soil loss in the long term.

Emphasize Watershed, Wildlife Habitat, and Soil Stability

This alternative would be the most advantageous in terms of reducing soil loss. Since total forage would be increased, livestock numbers would be held constant and grazing practices would be improved through periodic rest and improved distribution, thus reducing the net effect of livestock use.

As grazing pressure is removed from preferred sites, improved vegetative cover should result. This should lead to a more stable soil base.

Changes in soil stability are generally very slow to develop. No immediate change should be noticeable in the short term and only a slight change would be noticeable in the long term.

License No Livestock Use on Public Lands

Due to the soils' slow reaction time, there would be no appreciable effect to the soil resource on a short-term basis. A slight decrease in surface erosion in areas of reduced grazing use would be noticed over the long term.

WATER RESOURCES AND AQUATIC HABITAT

Affected Environment

Surface Water Resources

Ninety-eight percent of the Salt Wells-Pilot Butte area drains into the Green River Basin (Map 2-2). The remaining two percent drains into the Great Divide Basin (a closed basin) and the Little Snake River (a tributary to the Yampa River and, subsequently, Green River). Perennial drainages typically originate in the high country, where greater amounts of precipitation maintain surface flows and recharge groundwater aquifers which help maintain late season base flows. Numerous ephemeral drainages exist at lower elevations and flow only in response to precipitation events. While surface flows typically vary widely from season to season or year to year, average flow measurements for selected sites are given in Table 2-2.

Streams

Approximately 67 streams, including over 382 miles of stream habitat, have been identified on public land within the area (Smith 1978; Map 2-2; and Table 2-3). Fish species composition by major drainage, along withaverage stream habitat condition, are noted in Table 2-4 (Smith 1978; Richards and Holden 1981). Resident historical accounts indicate that stream-associated habitat and watershed conditions in many of the perennial drainages have changed markedly over the past 75 years. Typically, an upstream progression of channel headcutting has lowered many valley bottom water tables, resulting in the loss of both stream habitat and associated riparian rangeland productivity. It has been found in recent riparian vegetation surveys that only 17% of presettlement riparian habitat remains in those drainages east of the Flaming Gorge Reservoir. Production losses for livestock alone are estimated at approximately 7,400 AUMs annually (Shute undated). This loss is starkly in evidence by remnants of willows and other high-production, stream-supported riparian plants in areas which now have become extensive sagebrush or greasewood bottoms. Within recent times (past ten years), trout-supporting stream habitat on public lands approximated 15 miles. Brook trout are the most common trout in the area. A relict population of Colorado River cutthroat trout exists in about three miles of upper Red Creek and Currant Creek.

Primary water quality and stream habitat concerns presently focus around the extensive amount of channel erosion and water quality degradation which have occurred, resulting in accelerated sedimentation and nutrient enrichment, especially of the Flaming Gorge Reservoir and Green River (CH_2M Hill 1976).

An example of this problem is the Red Creek drainage, which annually generates enough sediment into the Green River to cover the streambottom one-half inch deep, for 18 miles (Smith 1975). A large portion of this erosion is thought to be geologic (naturally occurring); but man's activity has accelerated the process. Presently the most pressing management requirement with respect to grazing is to stabilize these drainages through the reestablishment of dynamic and stable riparian vegetation communities. This would serve to create vegetative biological filters, which will trap sediment and recycle suspended nutrients into increased terrestrial vegetation production. That would help to reelevate the water table, leading to restoration of channel stability and resource productivity (Logan 1979, Boto and Patrick 1978; Allen 1978; Kadlec and Kadlec 1978; Richard and Cushing 1982). Pilot studies evaluating the potential for achieving this type of recovery through the use of beaver management are presently underway on Currant and Sage creeks (Apple 1981 and 1982).

Reservoirs

The Flaming Gorge Reservoir is the largest reservoir within the area, extending for more than 90 miles in length in both Utah and Wyoming. While this reservoir is not under BLM management, secondary effects of surrounding watershed management programs have a significant influence on water quality of the reservoir. Presently, a nutrient enrichment problem (leading to eutrophication of the Wyoming segment) has

Table 2-2

STREAMFLOW DATA

USGS Gauging Station	Station No.	Location	Period of Record	Drainage Area in Square Miles, at Gauging Station	Average Annual Discharge in cfs/ac/ft	Maximum Discharge (cfs)	Minimum Discharge (cfs)	1978 Annual Discharge in Acre/Feet
Green River near Green River, Wyoming	09217000	Section 26, T. 18 N., R. 107 W.	1951+	14,000	1,703/1,234,000 (28 years)	16,800 9/7/65	170 11/16/55	1,532,000
Henrys Fork near Manila, Utah	09229500	Section 23, T. 12 N., R. 109 W.	1928+	520	81.1/58,760 (51 years)	6,750 8/3/36	0 period in 1933-35	47,410
Vermillion Creek near Hiawatha, Colorado	09235300	Section 15, T. 12 N., R. 99 W.	1975+	196	1/	1,160 9/7/78	0 many days in most years	1,360
Bitter Creek near Bitter Creek, Wyoming	09216545	Section 36, T. 18 N., R. 99 W.	1975+	308	1/	640 7/25/77	0 many days in 1977-1979	1,730
Bitter Creek above Salt Wells Creek	09216562	Section 2, T. 19 N., R. 103 W.	1976+	836	1/	888 8/10/79	0 many days in most years	2,610
Salt Wells Creek near South Baxter, Wyoming	09216565	Section 15, T. 15 N., R. 103 W.	1976+	347	1/	347 7/24/77	0 many days in 1977 & 1979	763
Salt Wells Creek near Salt Wells, Wyoming	09216750	Section 14, T. 19 N., R. 103 W.	1975+	526	1/	1,650 8/1/76	0 many days in most years	1,440
Blacks Fork near Little America, Wyoming	09224700	Section 15, T. 18 N., R. 109 W.	1962+	3,100	336/243,400 (17 years)	9,980 6/13/65	0 9/20/62	217,300

Source: Data from USGS, Water Resources Data for Wyoming.

1/ Data not available.

Watershed Boundary

Water Producing Areas; High Precipitation

Water Producing Areas; Ground Water Surface

N

Seedskadee National Wildlife Refuge

BIG SANDY

GREEN

RIVER

BLACKS

FORK

GREEN

RIVER

HENRY'S FORK

DRY CREEK

UINTA COUNTY

SWEETWATER COUNTY

KILLPECKER CREEK

NORTH BAXTER BASIN

BITTER CREEK

LITTLE BITTER CREEK

SALT WELLS CREEK

SAGE CREEK

CURRANT CREEK

MARSH CREEKS

SPRING CREEK

RED CREEK

RED DESERT BASIN

BITTER CREEK

VERMILLION CREEK

LITTLE SNAKE RIVER

Continental Divide

Green River

Blacks Fork

Killpecker Creek

Bitter Creek

Wells Creek

Salt Creek

Black Butte Creek

Little Bitter Creek

Sage Creek

Currant Creek

Red Creek

Spring Creek

Alkali Creek

Vermillion Creek

Flaming Gorge National Recreation Area

Superior

Jim Bridger Plant and Coal

Point of Rocks

Baxter

Rock Springs

Green River

Black Butte Coal

Bitter Creek

South Baxter

McKinnon Junction

McKinnon

Fort LaClede

191 371 30 80 372 430 530

T 22 N

T 21 N

T 20 N

T 19 N

T 18 N

T 17 N

T 16 N

T 15 N

T 14 N

T 13 N

T 12 N

R114W R113W R112W R111W R110W R109W R108W R107W R106W R105W R104W R103W R102W R101W R100W

R99W R98W R97W R96W

5 0 5 10 15 Miles

UTAH | COLORADO

Map 2-2

MAJOR WATERSHEDS

Salt Wells - Pilot Butte

Grazing Environmental Impact Statement

Table 2-3

STREAMS AND IDENTIFIED MILES OF AQUATIC HABITAT BY MAJOR DRAINAGE
IN THE SALT WELLS-PILOT BUTTE AREA

Drainage Name/Streams	BLM 1/		State	Private	Total
Bitter Creek					
1. Bitter Creek	49.1	43%	0.9	63.0	113.0
2. Antelope Creek	1.8	18%	0.5	7.7	10.0
3. Deadman Wash	0.0	--	0.0	0.0	0.0
4. Pine Creek	0.0	--	0.0	0.0	0.0
5. Killpecker Creek	0.0	--	0.0	0.0	0.0
6. Tenmile Creek	0.0	--	0.0	0.0	0.0
	50.9	41%	1.4	70.7	123.0
Salt Wells					
1. Salt Wells Creek	41.3	58%	2.6	27.6	71.5
2. East Salt Wells Creek	16.3	80%	1.1	2.9	20.3
3. Pretty Water Creek	4.8	42%	0.0	6.6	11.4
4. Circle Creek	0.0	--	0.0	0.0	0.0
5. Gap Creek	12.5	69%	5.5	0.0	18.0
6. Dan's Creek	7.1	53%	4.9	1.5	13.5
7. Alkali Creek	2.0	63%	1.2	0.0	3.2
8. Corral Creek	0.6	27%	1.6	0.0	2.2
9. Joyce Creek	0.0	--	0.0	0.0	0.0
10. Black Butte Creek	8.2	39%	0.0	13.0	21.2
11. Beans Spring Creek	0.0	--	0.0	0.0	0.0
12. Little Basin Creek	0.0	--	0.0	0.0	0.0
13. Tommy James Creek	0.0	--	0.0	0.0	0.0
14. No Name Creek	0.0	--	0.0	0.0	0.0
	92.8	58%	16.9	51.6	161.3
Red Creek					
1. Red Creek	10.8	58%	4.7	3.0	18.5
2. Daniels Creek	4.0	100%	0.0	0.0	4.0
3. Greenhough Creek	3.0	55%	0.0	2.5	5.5
4. Snow Creek	5.8	97%	0.0	0.2	6.0
5. Costello Creek	3.6	72%	1.0	0.4	5.0
6. Little Red Creek	3.1	44%	1.0	2.9	7.0
7. Ely Creek	4.8	83%	0.6	0.4	5.8
8. Lizzie Spring Creek	1.9	63%	1.1	0.0	3.0
9. Beef Steer Creek	4.0	100%	0.0	0.0	4.0
10. June Creek	3.5	88%	0.5	0.0	4.0
11. Teepee Creek	3.0	70%	1.0	0.3	4.3
	47.5	71%	9.9	9.7	67.1
Little Bitter Creek					
1. Little Bitter Creek	20.3	49%	3.5	18.0	41.8
2. Worm Creek	0.0	--	0.0	0.0	0.0
3. Cedar Creek	0.0	--	0.0	0.0	0.0
	20.3	49%	3.5	18.0	41.8
East Flaming Gorge					
1. Sage Creek	14.7	53%	0.9	12.4	28.0
2. West Spring Creek	6.0	97%	--	0.2	6.2
3. Spring Creek	4.6	54%	1.5	2.4	8.5
4. Currant Creek	16.8	55%	4.7	9.2	30.7
5. Trout Creek	0.0	25%	6.0	4.5	14.0
6. Marsh Creek	0.0	--	0.0	0.0	0.0
7. Middle Marsh Creek	0.0	--	0.0	0.0	0.0
8. Grouse Creek	0.0	--	0.0	0.0	0.0
9. Jarvis Creek	0.0	--	0.0	0.0	0.0
10. Washam Wash	0.0	--	0.0	0.0	0.0
11. Sugarloaf Wash	0.0	--	0.0	0.0	0.0
12. Alkali Creek	0.0	--	0.0	0.0	0.0
13. Fourmile Gulch	0.0	--	0.0	0.0	0.0
14. Watergap Wash	0.0	--	0.0	0.0	0.0
15. Greasewood Wash	0.0	--	0.0	0.0	0.0
16. Gooseberry Creek	0.0	--	0.0	0.0	0.0
	45.6	52%	13.1	28.7	87.4

Table 2-3
(Continued)

Drainage Name/Streams	BLM [1]		State	Private	Total
Vermillion Creek					
1. Vermillion Creek	21.5	72%	4.2	4.3	30.0
2. Coyote Creek	7.9	73%	0.4	2.5	10.8
3. Canyon Creek	7.2	52%	2.5	4.1	13.8
4. McKnight Creek	2.1	58%	1.5	0.0	3.6
5. Alkali Creek	17.5	69%	4.7	3.0	25.2
	56.2	67%	13.3	13.9	83.4
Henrys Fork					
1. Henrys Fork River	4.6	9%	3.2	41.2	49.0
2. Cottonwood Creek	3.5	73%	0.8	0.5	4.8
3. Franklin Wash	10.5	97%	0.0	0.3	10.8
4. Dry Fork	23.0	92%	1.5	0.5	25.0
5. Baker Creek	10.0	87%	0.5	1.0	11.5
6. Soda Creek	1.5	83%	0.0	0.3	1.8
7. Beaver Creek	0.8	9%	0.5	7.5	8.8
8. Lamb Creek	2.8	53%	0.0	2.5	5.3
9. Anvil Hollow	12.0	87%	0.0	1.8	13.8
	68.7	53%	6.5	55.6	130.8
Blacks Fork*					
1. Blacks Fork River	0.0		0.0	0.0	0.0
2. Sage Creek	0.0		0.0	0.0	0.0
Divide Basin					
1. Black Rock Creek	0.0		0.0	0.0	0.0
TOTALS	382.0	55%	64.6	248.2	694.8

* None identified within the Salt Wella-Pilot Butte area. See Table 2-4 for stream habitat information.

[1] Listed by miles of BLM aquatic habitat and percent of total habitat within stream.

Table 2-4

MILES OF SURVEYED PUBLIC LAND, STREAM HABITAT, RATED QUALITY, AND FISH SPECIES COMPOSITION

Major Drainage	Miles Rated on BLM[1/]	Present Average Channel Stability[1/]	Apparent Stream Habitat Trend [1/]		Acres of Riparian Habitat Per Mile (Ac) and Condition					Fish Species[2/]
			Stable	Declining	Ac.	Good	Fair	Poor	Virtually None	
1. Bitter Creek	48	106 (Low Fair)	69%	31%	5	10%	66%	23%	1%	5, 8, 10, 11, 12, 13, 14
2. Salt Wells Creek	60	114 (Poor)	64%	36%	4	11%	47%	36%	6%	8, 9, 13
3. Little Bitter Creek	20	103 (Low Fair)	55%	45%	3	13%	69%	18%	0%	9, 10, 13
4. Red Creek	26	104 (Low Fair)	40%	60%	9	6%	20%	74%	0%	1, 4
5. East Flaming Gorge	21	103 (Low Fair)	32%	68%	2	0%	43%	41%	16%	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15
6. Vermillion Creek	50	89 (High Fair)	16%	84%	3	0%	39%	51%	10%	4, 6, 8, 13
7. Henrys Fork River	7	102 (Low Fair)	0%	100%	16	6%	51%	43%	0%	1, 2, 5, 6, 7, 8, 11, 12, 13, 14, 15
8. Blacks Fork River[3/]	0	---	--	--	--	--	--	--	--	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16

1/ BLM-URA data. Each reach of stream is evaluated for a number of factors related to the condition of the upper banks, lower banks, and bottom; the number shown here is the total value of those evaluations (BLM Manual 6671-3, Appendix 1).

2/ Bio/West, Inc. 1981. Fish species are referenced according to the following key:

Cutthroat trout - 1	Fathead minnow - 10
Rainbow trout - 2	White sucker - 11
Brown trout - 3	Flannelmouth sucker - 12
Brook trout - 4	Mountain sucker - 13
Utah chub - 5	Bluehead sucker - 14
Roundtail chub - 6	Mottled sculpin - 15
Redside shiner - 7	Carp - 16
Speckled dace - 8	
Longnose dace - 9	

3/ None identified on public lands in Salt Wells-Pilot Butte Area.

been identified in association with phosphate (PO_4) increases. The exact cause is not known, however, municipal discharge and accelerated soil erosion and sediment generation are thought to be the sources. Phosphate is a limiting factor in many aquatic ecosystems. When phosphate is introduced, conditions for alga growth dramatically increases. The algae grow rapidly and utilize oxygen contained in the water. As the oxygen is depleted, the fish populations which require the oxygen are reduced. Figure 2-1 shows this eutrophication process as it relates to temperature, pH (see Glossary), and the concentration of oxygen in the water. The information shown was gathered at Station 24, near the Blacks Fork-Green River confluence. The BLM pilot studies on Currant and Sage creeks are an initial effort to help identify methods for ameliorating (see Glossary) this problem through ecosystem management principles.

Approximately 130 reservoirs exist on public lands, providing stockwater and important wetland sites for a variety of uses, in this predominately cold desert area.

Water Quality

The quality of water refers to its physical, chemical, biological, and radiological content. Present water quality standards have been established by the Environmental Protection Agency (EPA) and Wyoming Department of Environmental Quality (DEQ). Table 2-5 shows typical water quality data, as sampled by the U.S. Geological Survey and BLM, from stations throughout the area. Typically, concentrations of the major inorganic constituents, as well as turbidity and alkalinity (see Glossary), increases as flows progress downstream. Suspending sediment tends to be directly proportional, and dissolves solids concentrations inversely proportional, to discharge on most streams. This latter relationship is, in turn, directly related to channel stability conditions, as affected by vegetative cover necessary for stable banks.

Groundwater Resources

Groundwater resources in the Salt Wells-Pilot Butte area are generally undeveloped. Little quantitative information on these resources is available at present, but existing information from test wells indicates that opportunities for development are limited. Shallow groundwater aquifers exist at depths from near the surface to about 300 feet in some locations in the area. Within this zone are the unconsolidated aquifers such as flood plains and alluvial deposits, terrace gravels, and consolidated sandstones. Deeper wells into consolidated aquifers generally have the potential to produce moderate to large yields; however, site-specific potentials currently cannot be predicted with the limited amount of information available. Generally, the deeper aquifers yield water of an inferior quality.

The most important aquifers for surface land management practices are those shallow or perched aquifers associated with wetland habitat and aspen stands. As noted earlier, perennial streams originate in the higher elevations of most drainages. In these locations, the forest canopy, particularly aspen communities, provide for water storage in the form of heavy snow accumulations.

Accumulations which regenerate ground water recharge zones which are the basis for most artesian spring flows and late season base flow maintenance in streams. Recent evidence in many present or former aspen communities indicates that regeneration is not occurring, subsequently reducing the associated ground water recharge functions of the ecosystem.

Environmental Consequences

Proposed Action

The proposed implementation of AMPs on "I" allotments along with their associated range improvements (vegetation treatments, water developments, etc.), would exert an influence for change on most drainages. Spray and burn projects would initially add sedimentation as existing vegetation is removed. This is most applicable on prescribed burns. However after new vegetation (grasses) reclaim the site, the treated area should yield less sediment than the drainage is currently producing.

Range improvement projects by themselves are expected to have little effect on improving riparian or aquatic habitat, since the increases in forage and production would be accompanied by increases in livestock use. However, more intensive grazing practices involving periodic rest should help stabilize the vegetation and decrease sedimentation from the watershed.

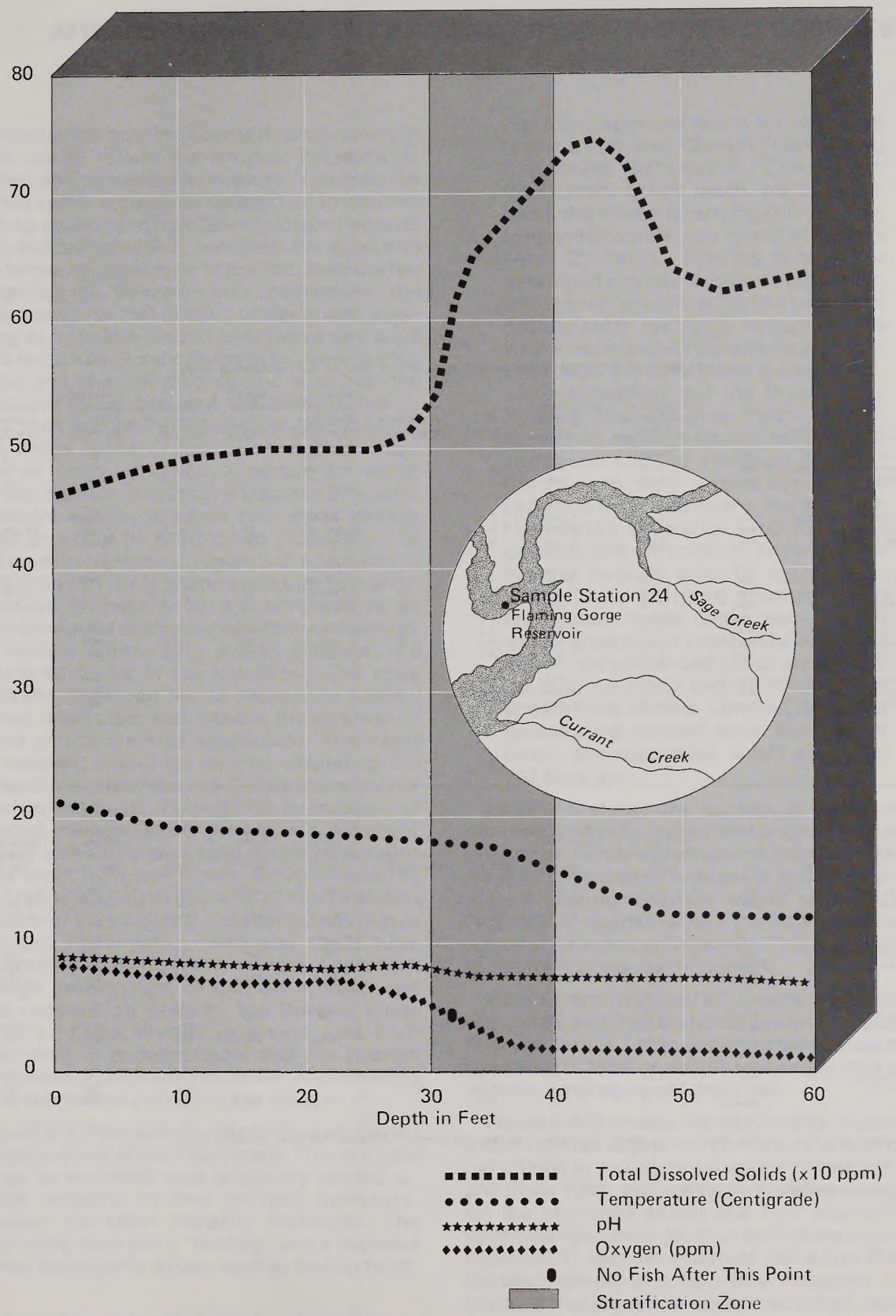


Figure 2-1

RELATIONSHIP OF TEMPERATURE AND CHEMICAL STRATIFICATION TO WATER QUALITY AND LIMNOLOGICAL CYCLES IN RESERVOIRS

Table 2-5

REPRESENTATIVE GEOLOGICAL SURVEY AND BLM WATER QUALITY DATA FOR SALT WELLS-PILOT BUTTE

USGS Gauging Station		Streamflow Instantaneous (cfs)	Specific Conductance (Micro-mhos)	pH (Units)	Temperature (Degrees C.)	Turbidity in Jackson Turbidity Units (JTU)	Fecal Coliform (Cols./ 100ml)	Dissolved Oxygen (mg/l)[1]	Total Dissolved Solids (TDS) (mg/l)[1]	Suspended Sediment (mg/l)[1]
Green River near	Min -	390.00	360	8.0	0.0	1.00	1	7.0	237	2.00
Green River, Wyoming	Max -	3,870.00	930	9.1	22.0	75.00	56	11.8	609	1,040.00
09217000	Mean -	1,254.00	596	8.4	9.0	11.00	16	9.87	390	54.66
Bitter Creek above	Min -	0.07	1,200	7.6	0.0	2.00		7.7	916	34.00
Salt Wells Creek	Max -	776.00	8,000	8.6	23.0	21,600.00	[2]	11.5	7,550	49,600.00
09216562	Mean -	45.90	4,029	8.2	9.3	3,071.00		11.1	1,418	40,297.00
Salt Wells Creek near	Min -	0.08	440	8.0	0.0	2.00		7.7	397	0.00
South Baxter, Wyoming	Max -	11.00	1,350	8.5	27.0	2,300.00	[2]	11.5	1,010	7,130.00
09216565	Mean -	2.00	931	8.2	7.9	356.00		9.9	546	1,550.00
Killpecker Creek at	Min -	0.08	2,600	7.3	0.0	6.00	110	0.6	1,590	
Rock Springs, Wyoming	Max -	0.80	8,000	8.5	27.5	100.00	75,000	19.2	8,920	[2]
09216810	Mean -	0.26	6,070	8.0	13.7	30.00	9,718	6.5	3,993	
Henrys Fork near	Min -	0.45	900	8.0	0.0				469	
Manila, Utah	Max -	85.00	2,500	8.4	22.0	[2]	[2]	[2]	2,030	[2]
09229500	Mean -	26.00	1,480	8.2	10.8				818	

BLM Level II 1979 Sampling Site		Streamflow Instantaneous (cfs)	Specific Conductance (Micro-mhos)	pH (Units)	Temperature (Degrees C.)	Major Cation (mg/l)	Major Anion (mg/l)	Alkalinity (mg/l)	Total Dissolved Solids (TDS) (mg/l)	Suspended Sediment (mg/l)
Sage Creek	Min -	0.51	1,300	7.90		Na	504.0	217	964	5.0
044-16	Max -	9.28	2,000	8.70	[2]			400	1,640	73,800.00
	Mean -	2.72	1,694	8.40		163.0	675.0	307	1,373	5,471.00
Currant Creek	Min -	1.45	520	6.65		Ca	HCO_3	258	410	10.00
044-17	Max -	8.79	820	8.63	[2]			345	584	290.00
	Mean -	5.11	685	8.28		64.0	366.0	318	494	127.00
Red Creek	Min -	0.40	790	8.10		Na	HCO_3	217	568	10.00
044-20	Max -	9.00	1,100	8.70	[2]			274	868	2,890.00
	Mean -	2.92	986	8.40		87.0	295.0	253	699	378.00
Vermillion Creek	Min -	0.78	300	7.90		Ca	HCO_3	124	86	3.00
044-10	Max -	11.25	530	8.80	[2]			270	396	933.00
	Mean -	2.17	447	8.50		43.0	236.0	213	267	125.00

Sources: Data from U.S. Geological Survey (USCS) Water Resources Data for Wyoming (1979) and BLM Level II Survey (1979).

[1] Flow weighted data.

[2] No data available.

The establishment of effective riparian-sensitive AMPs would initiate the greatest influence on riparian and streambank recovery. The deferred grazing systems could be anticipated to improve existing aquatic and riparian conditions one level (as noted in Figure 2-2) over both the short and long terms; i.e., from poor to low fair, from low fair to high fair, etc. Based on field observations, the Bureau believes that grazing systems with alternating early or late season deferments and a full year's rest could be anticipated to improve riparian habitat and channel stability one level over the short term (ten years) and two levels in twenty years, then maintain that condition over the long term. Areas in low or high fair condition could move to good condition in about ten years, provided riparian utilization is less than 50% and a significant willow or aspen root stock already exists, or would be established ("Condition" is used here in reference to Figure 2-2: According to the SCS guide (1977), willows make up 10% of the vegetation community for a subirrigated range site. From a strict ecological condition standpoint, this willow community would probably be considered to be in fair condition. The main objectives described are to maintain a healthy riparian ecosystem and prevent the invasion of upland shrubs such as sagebrush). This rapid improvement would be directly related to the successful reestablishment of vigorous willow or aspen communities. Through the interactions of balanced, managed beaver populations, this would not only stabilize many of the eroding drainages in the short term, but would begin to raise the water table, leading to a recovery of lost meadow habitat over the long term. Current studies (Apple 1982 and 1983; Smith 1980 and 1983) have demonstrated the benefit of this approach. Through development of grazing systems and close cooperation between the Bureau, range users, and the Wyoming Game and Fish Department, it is conceivable that the riparian improvement program could be implemented over a substantial portion of the area.

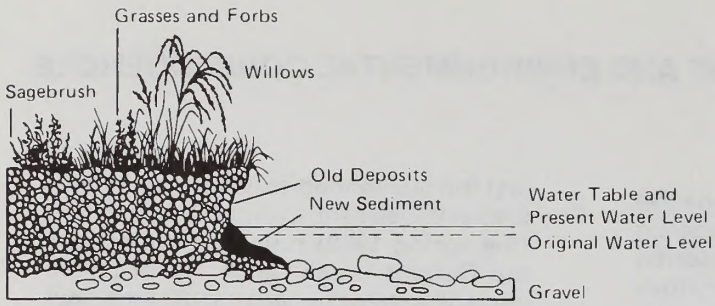
Figure 2-3 illustrates the effect of good riparian vegetation cover on sediment loads. This dramatic change in sediment load is directly related to stream velocity; as flow velocity increases, sediment transport capacity increases. The relationship between a "healthy" and a depleted riparian community is discussed by Smith (1978):

> To better understand the function of a good riparian community, briefly consider just the suspended solids (or sediment) load in this stream, Currant Creek, during (the spring 1982) runoff... Coming into the Currant Creek ranch, off of public lands, this stream is carrying (33 tons/day) suspended solids. At a runoff of 8.79 cfs (April 23, 1980)... Flowing through the developed riparian habitat noted earlier, extensive meadow formation and groundwater recharge occurs as the willow based beaver complexes intercept this runoff and precipitate the sediment, while spreading out the flow... After flowing through five miles of well developed riparian stream bottom, this sediment load is reduced from 33 tons/day to only 4 tons/day. A 90% reduction in sediment load which translates directly into meadow development... In contrast, however, after flowing through only 1½ miles of an intensively utilized pasture with moderately stable banks, very limited willow growth and practically no beaver ponds, the suspended solids are already up to 27 tons/day and by the time the stream flows another 1½ miles, through a greasewood bottom after leaving the ranch, the suspended solids are up to 109 tons/day.

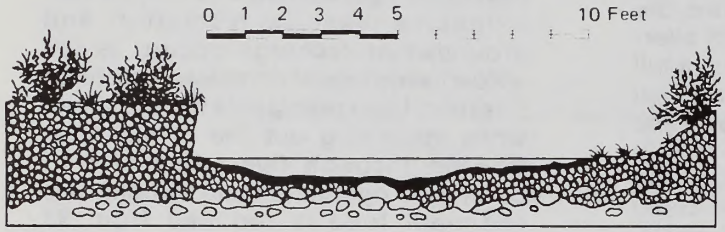
Table 2-6 shows the ecological relationship between a heavily grazed and ungrazed portion of a stream. While the proposed action would not result in ungrazed streambanks, it is felt that the overall grazing program would assist in the recovery of riparian willow communities and in promoting streambank stability. This would occur especially during rest treatment.

Maintain and custodial allotments are expected to maintain existing conditions except on localized heavy use areas. Improvement of these areas may be realized if local operators implement their own improved management practices.

Figure 2-4 illustrates the relationship of good or stable riparian vegetation conditions to sediment reductions in two study situations (Winegar 1977 and Smith 1980), and anticipated relative averages, for the proposed action and four alternatives. Improved riparian vegetation conditions could be expected to improve sediment reduction due to the development of good willow frequency (50% cover). Once the willow cover is achieved, beaver could inhabit the area and their dams would subsequently reduce stream erosion and help redevelop riparian meadows. As shown on Figure

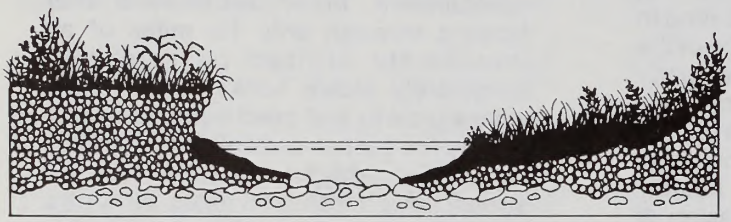


Key



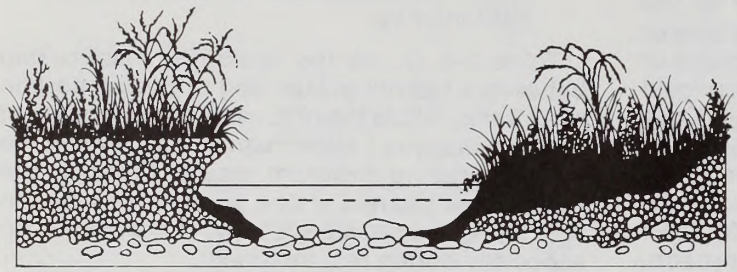
Poor

Channel wide, shallow and easily warmed by full exposure to solar radiation. Low bank stability with active bank erosion. Riparian vegetation quite limited, sagebrush to the streambank in many areas. Low riparian water table. Bottom sediment approaches 60%+, smothering gravel deposits. Habitat for aquatic or terrestrial wildlife essentially nil.



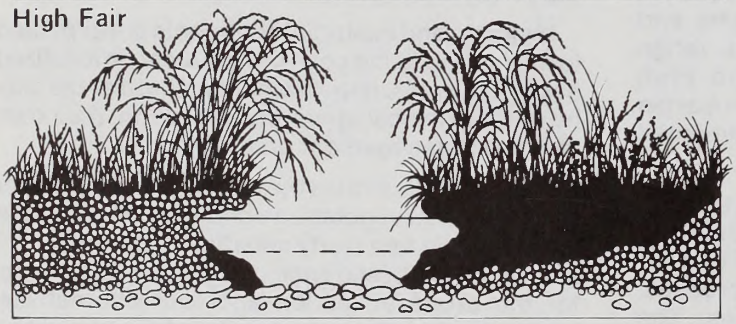
Low Fair

Riparian vegetation begins to form on silted bars and banks forming a sediment trap which builds up banks and begins to confine the channel. Water surface still fully exposed to warming, but level begins to rise, forcing out riparian sagebrush and bringing back riparian vegetation. As flow becomes confined, sediment is reduced to 40-60%. Conditions similar to those of moderate grazing pressure. Willow growth depressed. Habitat value to aquatic or terrestrial wildlife is still quite limited.



High Fair

Semi-confined by development of riparian vegetation with dense root mass. Banks stabilized by vegetation and bottom sediment reduced to approximately 20-30%. Rising water table is reducing sagebrush in favor of riparian grass shrubs. Stream continues deepening as bank resistance to erosion increases. Pools and riffles for fisheries are improving as more gravel is exposed.



Good

Confined-deep channel, elevated riparian water table, fully developed vegetation in riparian zone stabilizing cutbanks, deposited sediment and over hanging banks. Physical cover highly developed for both aquatic and terrestrial organisms. Bottom gravels clean with only 10-15% sedimentation. Reduced water temperatures due to 40-60% shading of surface area.

Adapted from "Guidelines for Management of Trout Habitat in Wisconsin," 1967

Figure 2-2
EFFECTS OF CATTLE GRAZING ON TROUT HABITAT

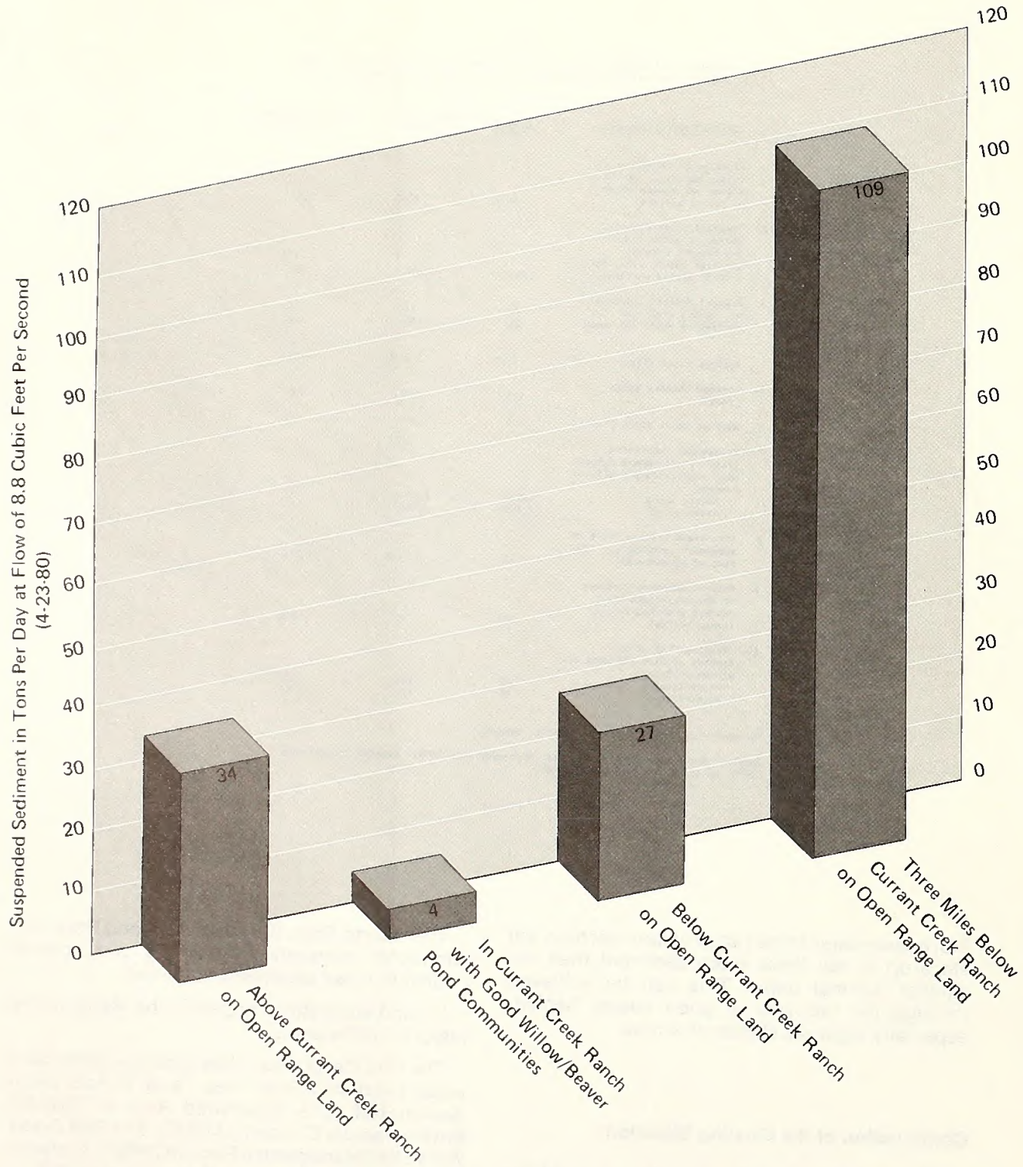


Figure 2-3
CURRANT CREEK: SUSPENDED SEDIMENT SAMPLES ILLUSTRATING THE STABILIZING EFFECT AND TRAP EFFICIENCY OF GOOD RIPARIAN VEGETATION COVER AND THE RELATIONSHIP OF BEAVER ACTIVITY TO SEDIMENT STORAGE

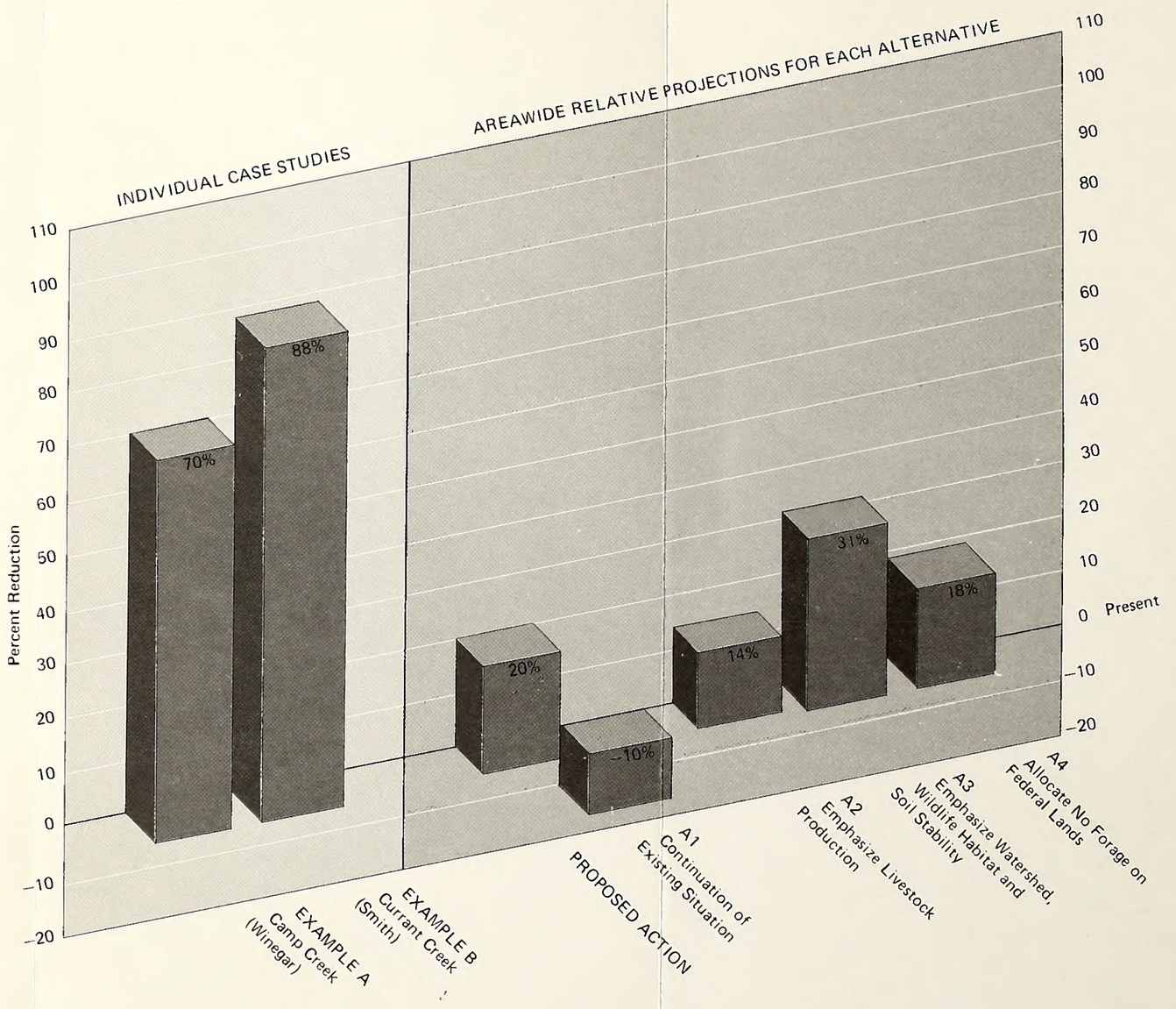


Figure 2-4
COMPARATIVE RELATIONSHIPS AND RELATIVE LONG-TERM SUSPENDED SEDIMENT REDUCTIONS OF TWO ILLUSTRATIVE EXAMPLES AND THE SALT WELLS-PILOT BUTTE GRAZING MANAGEMENT ALTERNATIVES

Table 2-6

COMPARISON OF STREAM HABITAT ELEMENTS BETWEEN A PORTION OF A STREAM UNDER SEASON-LONG GRAZING AND A PORTION OF A STREAM WITHOUT LIVESTOCK GRAZING

Stream Habitat Element	Condition		Percent Change From Ungrazed
	Grazed	Ungrazed	
1. Riparian Shrub Volume (cubic meters of aerial volume per square meter of ground surface)	6.67	85.3	-92
2. Overhead Cover (total number of units such as overhanging shrubs, undercut banks, etc., per acre of stream surface)	2,289	4,037	-43
3. Channel Habitat (percent of channel area with	78	54	+44
riffles or pools and runs)	21	46	-54
4. Average Depth (feet)	1.06	1.34	-21
5. Average Channel Width (feet)	141	74	+91
6. Average Water Width (feet)	103	66	+56
7. Streambank Vegetation (feet of streambank covered with vegetation per mile of stream)			
Before Flood	1,593	3,000	-47
After Flood	1,305	3,366	-61
8. Streambank Erosion (feet of streambank eroding per 100 feet of streambank)	19	1.3	+1,362
9. Channel Movement (percent of channel length that changed position in the stream bottom)	77	18	+328
10. Standing Crop of Fish (pounds of fish per acre of stream surface)			
Brown Trout	63	213	-70
Other Fish	52	122	-57

*Grazed ÷ ungrazed - 1 x 100 = Percent Change.

Source: Sandy Grazing Environmental Statement (BLM 1978). Adapted from Marcusson (1970 and 1971) and Gunderson (1968).

2-5, beaver dams in the range of four feet high will store up to ten times more sediment than the smaller, normal dams. This can be achieved through the recovery of good beaver habitat, especially vigorous stands of willow.

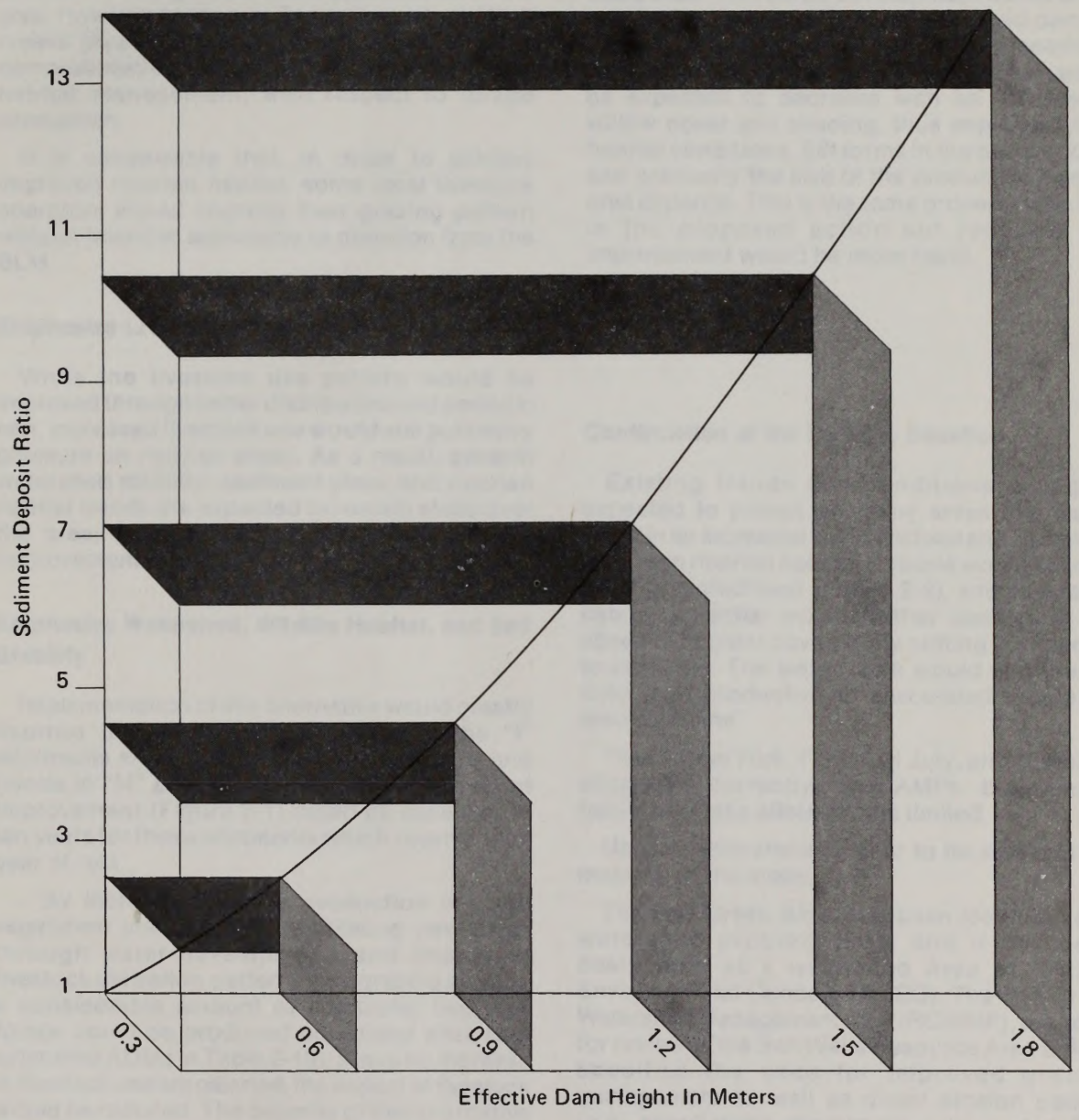
Continuation of the Existing Situation

Existing trends and conditions would be expected to prevail. In many areas this would result in an increased sediment load and continued decline in riparian habitat. Streams would become wider and shallower (Figure 2-2), and as a result fishing potential would further decline. In the absence of plant cover, gully cutting is expected to continue. The water table would continue to drop, and productivityof associated vegetation would decline.

The Henrys Fork, Fourth of July, and Donohoo allotments currently have AMPs, but riparian habitat in these allotments is limited.

Upland watersheds appear to be stable in the majority of the areas.

The Red Creek Basin has been identified as a watershed problem area, and it has been designated as a watershed Area of Critical Environmental Concern (ACEC). The Red Creek Watershed Management Plan (RCWMP), available for review at the Salt Wells Resource Area Office, specifies the need for improved grazing management as well as direct erosion control (e.g., check dams, road improvement, etc.). The absence of improved grazing management hinders the RCWMP. Accelerated erosion, which eventually ends up as sedimentation in the Green River, would continue. Localized (riparian) overuse is probably the most significant environmental



(From B. Heede, 1978)

Figure 2-5
EXPECTED SEDIMENT DEPOSITS RETAINED BY CHECK DAM TREATMENTS AS A FUNCTION OF EFFECTIVE DAM HEIGHT

problem, limiting streambank stabilization in the area. However studies on Sage, Currant, and Huff creeks (Apple 1982 and 1983; Smith 1978) have demonstrated economic benefits to proper riparian habitat management, with respect to forage production.

It is conceivable that, in order to achieve improved riparian habitat, some local livestock operators would improve their grazing pattern without financial assistance or direction from the BLM.

Emphasize Livestock Production

While the livestock use pattern would be improved through better distribution and periodic rest, increased livestock use would still put heavy pressure on riparian areas. As a result, present watershed stability, sediment yield, and riparian habitat trends are expected to remain static over the area. Localized areas may show a slight improvement or decline.

Emphasize Watershed, Wildlife Habitat, and Soil Stability

Implementation of this alternative would greatly improve the watershed conditions of the "I" allotments and maintain existing conditions and trends in "M" and "C" allotments. Two levels of improvement (Figure 2-1) could be expected in ten years for those allotments which receive a full year of rest.

By increasing forage production through vegetation manipulation, facilitating new areas through water development, and improving livestock utilization patterns via a grazing system, a considerable amount of additional livestock forage could be produced on upland sites (see estimated AUMs in Table 2-16). Since no increase in livestock use are planned, the impact of livestock would be reduced. The benefits of this alternative are based on the premise that livestock at the existing stocking levels, can be managed in such a manner that the animals would be drawn out of the streambottoms through rotation grazing and the additional upland forage produced following vegetation treatments. The Bureau believes that riparian vegetation would respond to periodic rest and reduced utilization.

This grazing program should allow recovery of preferred sites which are often riparian areas. Willow and other shrub speciesshould recover on these sites. This shrub development would create habitat for beaver, which in turn would dam the creeks and thus slow the rate of sediment generation. The temperature of the stream would be expected to decrease with an increase of willow cover and shading, thus improving trout habitat conditions. Silt forms in the beaver ponds and gradually the size of the productive riparian area expands. This is the same process described in the proposed action but recovery and improvement would be more rapid.

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License No Livestock Use on Public Lands

After implementation of this alternative, livestock use would be reduced to the level of the privately controlled AUMs shown in Table 1-13. However the remaining animals using the area as indicated under the alternative would undoubtedly spend a considerable amount of their time in preferred riparian bottoms. As a result no dramatic improvement of riparian habitat is expected. Areas where a substantial reduction of cattle use is proposed may slowly improve. No significant change is expected in traditional sheep winter ranges.

VEGETATION

Affected Environment

The Salt Wells-Pilot Butte area has a variety of plant communities. The information available on vegetation was gathered in 1979 and 1980 through range site mapping, and in 1963 through mapping of vegetation types via the ocular reconnaissance method. This area's plant communities are generally described by either vegetation types or range sites. The correlation between vegetation types and range sites is shown in Table 2-7.

A range site is a distinctive kind of rangeland, which in the absence of abnormal disturbance and physical site deterioration, has the potential to support a native plant community typified by an association of species different from that of other sites. This differentiation is based upon significant differences in kind or proportion of species, or total productivity. The range site system was developed by the Soil Conservation Service (SCS). The area contains numerous range sites which are described in detail in the SCS "Technical Guides for Foothills, Mountains, and Basins West of the Continental Divide in Wyoming". The loamy range site discussed in Appendix D illustrates an example of the system. Range site acreage by condition and allotment are available for review in the Salt Wells and Big Sandy URAs.

Table 2-7

CORRELATION BETWEEN VEGETATION TYPES AND RANGE SITES

Vegetation Type	Range Sites by Precipitation Zone		
	7 to 9 Inches	10 to 14 Inches	15 to 19+ Inches
Sagebrush	Clayey Loamy Sanda Sandy Shallow Clayey Shallow Loamy Shallow Sandy	Clayey Loamy Sandy Shallow Clayey Shallow Igneous Shallow Loamy Shallow Sandy	Clayey Shallow Igneous Loamy
Saltbuah	Saline Upland Shale Shallow Sandy	Saline Upland Shale	
Greasewood	Saline Upland Saline Lowland-drained	Saline Lowland	
Pinion-juniper	Shallow Breaks Very Shallow	Shallow Breaks Very Shallow	Very Shallow
Deaert Shrub	Sands Sandy	Sands	
Broadleaf	Lowland	Loamy Lowland Wetland	Igneous Loamy Wetland
Conifer		Sandy	Loamy
Mountain Shrub		Igneous Shallow Breaks Very Shallow	Igneous Loamy Shallow Loamy Steep Stoney Stoney Very Shallow Coarae Upland
Half Shrub	Impervious Clay Dense Clay Gravelly Shale	Dense Clay Gravelly Shale	Gravelly
Barren	Active Dunes Badlands	Active Dunes Badlands	Active Dunes Badlands
Perennial forb	Gravelly Very Shallow	Coarae Upland Gravelly Very Shallow	Gravelly Very Shallow
Meadow	Lowland Saline Subirrigated Subirrigated Wetland	Clayey Overflow Lowland Overflow Saline Subirrigated Subirrigated Wetland	Clayey Clayey Overflow Overflow Saline Subirrigated Subirrigated Wetland
Grass	Impervious Clay Clayey Denae Clay Shallow Clayey	Coarae Upland Dense Clay	Clayey Coarse Upland Dense Clay Gravelly Steep Stoney Stoney
Annual	Areaa dominated by annuala are the reault of invaaions of diaturbed areas by weed species; included in thia deaignation are halogeton and Russian thistle.		
Waste	Denae timber, inaccessible areas, large areaa of aparae forage. Thia type designation only considera range uae in connection with liveatock.		

Vegetation types, used by the BLM, are broad classifications of communities dominated by a widespread shrub, tree, or grass. The eleven broad vegetation types discussed in the text are an expression of the wide range of climatic and edaphic (see Glossary) conditions found throughout the West (Map 2-1). Appendix F shows the acreage of each vegetation type by allotment. In addition to the broad classifications described, there are numerous subtypes which describe local communities and correspond more directly to range sites. The approximate acreage of each vegetation type within the Salt Wells-Pilot Butte area is shown in Table 2-8. More detailed information is available in the Salt Wells and Big Sandy URAs. Production estimates described in this section are based on the SCS range site technical guides (1976). Scientific names associated with the common names are shown in Appendix A.

Table 2-8

APPROXIMATE ACRES OF VEGETATION TYPES IN SALT WELLS-PILOT BUTTE AREA

Vegetation Type	Approximate Acreage[1/]
Sagebrush	1,815,000
Saltbush	417,000
Greasewood	113,400
Desert Shrub	110,400
Juniper (Cedar)	237,400
Grass	199,800
Meadow	6,900
Broadleaf Trees	4,300
Conifer	6,900
Mountain Shrub	1,300
Half Shrub and Perennial Forb	58,000
Barren and Waste	104,800
TOTAL	3,075,200

1/ See Table F-1 in Appendix F for acres of vegetation type by allotment. Acreages are rounded to the nearest 100.

Sagebrush is the predominant shrub cover in the area. Sagebrush communities are found from the basins to the mountains, frequently on generally well-drained, nonalkaline soils. Subtypes described under the sagebrush type include areas dominated by big, black, and low sagebrush and rabbitbrush. Major grasses found in this community are thickspike and western wheatgrass, needle-and-thread, Indian ricegrass, squirreltail, and various bluegrasses. Since sagebrush occurs on a variety of soils and range sites, the production of these communities, which may also vary in species composition, is from 350 pounds per acre (lbs/ac) on shallow sites in the 7 to 9-inch precipitation zone to 1,800 lbs/ac in the 15 to 19-inch zone. It is one of the most important communities in the area, and it is heavily utilized by livestock and wildlife.

The Nuttall's saltbush community is generally found on heavy, alkaline, basin soils in the area. This community often integrates into greasewood and desert shrub communities. Other subtypes are winterfat, bud sagebrush, and birdsfoot sagebrush communities. The major grasses found in the community are Indian ricegrass and squirreltail. The general community is restricted to highly alkaline soils of the basins and slopes in the 7 to 9-inch and 10 to 14-inch precipitation zones. Production ranges from 450 lbs/ac to 600 lbs/ac. This community is most valuable for winter sheep and antelope use.

Closely associated with the Nuttall's saltbush communities are the greasewood communities found along many of the basin drainages. Greasewood is dominant in areas with dense, alkaline alluvial soils. The salt content of many of these soils is so high it restricts plant growth to a few halophytic species (see Glossary)—Nuttall's alkaligrass, inland saltgrass, and annual forbs. Production for most of these areas range from 400-900 lbs/ac. Some sites along the Green River may range as high as 1,800 lbs/ac.

Desert shrub communities are often found on the upland side of Nuttall's saltbush and greasewood communities and on sand dunes. These communities often occupy the drier areas which grade from nonalkaline to alkaline soils. Shadscale, horsebrush, and spiny hopsage are the most common dominants in the desert shrub areas. These sites are primarily limited to the 7 to 9-inch precipitation zone; production ranges from 300 lbs/ac to 700 lbs/ac, depending on site and climatic factors.

Juniper, often called cedar by local residents, is the only widespread woodland in the area. The community occupies the deep soil pockets in and along the sandstone ridges of the area. Often the juniper is interrupted by small pockets of sagebrush community. This community provides important cover for wildlife and some forage for grazing animals. In the higher precipitation zones the juniper is mixed with or replaced by mountain mahogany communities which are important areas for wildlife browse. Average production is 300 lbs/ac to 1000 lbs/ac, depending on the amount of interspersed sagebrush and grass communities.

Interspersed throughout all the vegetation types are areas in which various grasses are the dominant species. The most common is the bunch grass type, most frequently dominated by bluebunch wheatgrass. These areas produce between 500 lbs/ac and 1,500 lbs/ac. Some of this acreage includes large areas of communities such as Nuttall's saltbush, and is dominated by weight production of grasses rather than cover species. The acreage figure also includes areas that have been seeded to various grass species, primarily crested wheatgrass.

The meadow areas include grasses, sedges, and rushes which are wet for at least part of the year. They are found along the stream courses and wet, low-lying portions of the area. These areas are highly productive, 2,000 lbs/ac to 5,000 lbs/ac, and are extremely important to livestock and wildlife.

The broadleaf tree community includes several subtypes: willow, aspen, and cottonwood. The cottonwood communities are generally found along the major streams—the Green, Henrys Fork, and Blacks Fork rivers; willows are found along the smaller watercourses and snowbank areas; and aspens are most frequently found on northern and eastern slopes where snowbanks accumulate and along the upper reaches of area streams. Aspen communities are also found on the higher mountains in the southern portion of the area. All three subtypes are important livestock and wildlife forage areas with production ranging from 1,400 lbs/ac to 5,000 lbs/ac. The highest production occurs along perennial streams in the willow communities. Small, isolated pockets not identified in the range site mapping are important forage and cover areas for both livestock and wildlife. Many of the aspen stands are replaced by conifers on the more shaded slopes. The conifer type is represented in this area by stands of lodgepole pine, subalpine fir, Engelmann spruce, Douglas fir, and limber pine. The major stands are located on Pine and Little mountains.

A vegetation type which often produces 1,400 lbs/ac to 2,400 lbs/ac, dependent upon community condition and climatic factors, is the mountain shrub community. These areas are pockets of deep soil and high precipitation (snowbank). The community in these areas is dominated by serviceberry, chokecherry, bitterbrush, snowberry, and ceanothus. There is usually a high percentage

Table 2-9

OVERALL ECOLOGICAL RANGE CONDITION BY ALLOTMENT

Allotment Number and Name		Percentage of Total Acres in Allotment				
		Excellent	Good	Fair	Poor	Not Rated 1/
3016	Fourth of July	2	54	35	<1	9
3018	Rock Springs	2	38	52	4	4
4000	Sage Creek	<1	21	70	6	3
4001	Circle Springs	0	9	86	4	1
4002	Rife	1	40	57	1	1
4003	Vermillion Creek	<1	29	64	4	3
4004	Alkali Creek	8	38	53	<1	1
4005	Crooked Wash	11	21	59	5	4
4006	Horseshoe Wash	10	11	73	5	1
4007	Pine Mountain	13	76	4	6	1
4008	Red Creek	0	42	50	1	7
4009	Salt Wells	0	11	82	3	4
4010	Sugarloaf	3	26	64	5	2
4011	Spring Creek	19	54	35	<1	1
4012	Henrys Fork	0	14	73	9	4
4013	Hickey Mountain	0	26	70	0	4
4014	Larson	0	0	100	0	0
4015	Stag Hollow	0	90	10	0	0
4016	Donohoo	0	0	100	0	0
4017	Poison Creek	0	0	100	0	0
4018	Bald Hills	0	85	15	0	0
4019	Hanks	0	23	77	0	0
4020	Hisey Hollow	0	2	98	0	0
4021	Cedar Point	0	32	67	1	0
4022	Antelope Wash	0	1	87	12	0
4023	Circle Bar	0	0	48	52	0
4024	Sage	0	3	42	55	0
4025	Cottonwood Creek	0	3	80	17	0
4026	Peoples Canal	17	20	54	6	3
4027	Mellor Mountain	0	9	85	4	2

1/ Certain areas such as old seedings of crested wheat grass, heavily timbered lands, and barren badlands do not conform to the range site evaluation system and are not given condition rating.

Table 2-10

POISONOUS PLANT LIST

Name	Habitat	Dengerous Season	Grazing Animal Endangered	Poisoning Conditions and General Information
Tansy mustard	Saody alkaline soils	Summer	Cattle	Large amounts over long period of time.
Arrowgrass	Wet and slkaline bottomlands	All	All	Hydrocyanic acid. Dangeroue when frozen or in drought.
Chokecherry	Moiet deep eoils, moetly in foothilla	All	All, especially sheep	Large quaotities. Dangeroue wheo frozeo or wilted. Hydrocyanic acid.
Cocklebur	Irrigated fields and wet places	Spring	All, especislly cattle and pigs	0.75% of body weight, oot cumulative. First leaves or cotyledons, old plents ssfe.
Deathcamas	Poothills	Early Spring	All, especially sheep	Dry by early eummer, white flower odorless bulb, 0.5% of weight.
Greasewood	Alkaline bottomlands and wsshes	Spring	All, but moetly eheep	Oxalic acid. Large quantity on spring trails eaten alooe.
Halogeton	Disturbed aitee, roads	Pall, Wioter	All, but mostly sheep	Oxslic acid. Very unpalatable annual. Mieused ranges.
Horsebrush	Moatly dry semi-deserts	Spring	All, but mostly sheep	Spring trail, bighead, photoeensitivity. Early yellow flower.
Larkspur	Poothills, deeerts	Early Spring	Cattle	6 to 12' ephemeral, tuberlike root. Graze after June 1.
Locoweed & Milkvetch	Desert to mountains	All, Especially Spring	All	Cumulative, habit-forming, some acute poisons, crezed ection.
Lupine	Mountain foothills, areas of deep soils	Most when in fruit	Sheep	Pods and aeede of most species dangerous. Palmately compound.
Crazyweed	Sandy loamy eitee, 7 to 14-inch precipitation zone			

Sourcee:

Stoddart and Smith 1955. Raoge Manageoeot (Secood Editioo).

Jamee, L. F. and R. P. Keller, et sl. 1980. Plaote Poieonoue to Liveetock in the Weetern United Statee. Agriculture Information Bulletin No. 415. U.S. Department of Agriculture.

(60-80% by weight estimate) of grasses and forbs in these areas. Mountain brome, slender wheatgrass, Letterman's needlegrass, lupine, and arrowleaf balsamroot are representative grasses and forbs. On the whole, many of these areas are probably more important to wildlife than to livestock because this community occupies the steep lee slopes of the ridges in the area.

There are small acreages of half shrub communities scattered throughout the area. The majority are dominated by birdsfoot sagebrush and are found on dense clay areas. Most of these communities are found north of I-80 in the Pilot Butte portion of the Big Sandy Resource Area. Western wheatgrass, Indian ricegrass, and various forbs are also found on these sites, which are capable of producing 300-700 lbs/ac/yr. These are not critical areas for livestock grazing; however, some communities are dominated by woody aster, a selenium indicator. There have been no reports of selenium poisoning of livestock in the area.

The perennial forb community, generally occupies the droughty, shallow soils on windswept ridges. These areas are dominated by mat forbs such as mat astragalus, goldenweeds, phloxes, and fringed sagewort. There is occasionally bluegrass or bluebunch wheatgrass associated with the mat forbs. These areas can produce 200 to 500 lbs/ac.

Another classification used in discussing the rangeland is waste and barren lands. Waste lands are areas removed from production by man's activities. Barren areas are sites naturally devoid of vegetation such as sand dunes and badlands.

The status of the vegetation community is usually discussed in terms of condition and trend. Condition and the methods used to determine condition are discussed in Appendix D. Trend may be considered change in condition over time. Table 2-9 shows overall ecological range condition by allotment as determined during the 1979-80 range site mapping.

Poisonous Plants/Noxious Weeds

There are approximately fifteen species of poisonous plants in the area. These are generally scattered throughout the range and pose only minimal problems (Table 2-10). Poisoning often depends on climatic and range conditions in this area. Livestock will eat preferred forage before eating the undesirable plant. Many of the plants such as chokecherry and arrowgrass need to wilt or be frosted before becoming poisonous. There have been few clearly documented cases of poisoning; however, there are several reports every year that some stock has been lost, generally cattle.

The area has only one designated noxious weed, perennial pepperweed (whitetop). Perennial pepperweed is located in the Killpecker, Little Bitter Creek, and Bitter Creek drainages. Management proposals and decisions for this weed are described in detail in the designated noxious weed control EA (WY-049 EA82-64). Other weeds, some of which pose a problem to livestock, are found throughout the area. The most predominant weed is halogeton, which is found growing on old sheep bedding grounds and recent surface disturbances. No eradication efforts are underway for nondesignated weeds. Other weeds common to the area are Russian thistle, black henbane, Russian knapweed, povertyweed, gumweed, annual kochia, showy milkweed, blue mustard, shepherd's purse, bullthistle, and field pennycress.

Threatened and Endangered Plants

The area does not have any listed or proposed candidate species for protection under the Endangered Species Act. One species, Astragalus proimanthus, is considered a sensitive species because of its limited habitat. The plant is a mat plant that grows on exposed clay, shaly slopes in the southern portion of Salt Wells Resource Area. The plant and its habitat are protected from surface disturbance under the Salt Wells MFP. Livestock generally do not pose a threat to the plant.

Environmental Consequences

Proposed Action

Impacts to the vegetation resource are generally long term impacts. Any changes in the vegetation resource would be reflected in density, vigor, and composition of the plant community. Short-term impacts would result from site-specific vegetation manipulation. Impacts are expected from grazing treatment, water development, and actual vegetation manipulation.

Impacts associated with grazing systems would occur over a long period of time since the effects on vegetation would only begin to occur after a couple of grazing cycles are completed. Appendix G describes the effects of grazing systems on vegetation.

The deferred systems (ten allotments) would allow the key forage species to increase and maintain vigor. There probably would not be a large increase in desired grass species reproduction; however, an increase in vigor would provide an increase in available forage. The five allotments where rest is being considered should show an increase in vigor, seed production, and species reproduction in the desired grass species. These changes under both systems would be gradual. Communities most likely to respond are sagebrush, saltbush, the dry meadows, and grasslands. Areas in which livestock congregate, cattle in particular would stabilize, but are not expected to improve drastically. This is due to the fact that cattle would continue to heavily utilize preferred sites. However, as these preferred sites, notably riparian areas, begin to receive periodic rest and stabilize, slow development within the plant community should begin.

Water development would draw livestock into areas which have not been consistently used. As a result these areas would experience a slight decrease in preferred species. However, this action should assist in reducing the grazing pressure on traditionally heavy use areas.

The other major component of the proposed action is vegetation manipulation of suitable sites. Areas have been identified at this time which are potentially suitable for manipulation projects; these are indicated on maps available for review in the Salt Wells Resource Area Office.

Prescribed burns have been designated as the preferred management tool on loamy soil sites in the 7 to 9, 10 to 14, and 15 to 19-inch precipitation zones. Chemical treatment would be utilized on sandy soil sites in the 10 to 14 and 15 to 19-inch precipitation zones. This was a general rule of thumb in the preparation of this document. Features such as canopy coverage and soil moisture are also important in projecting the effectiveness of a prescribed burn. Vegetation manipulation is used to rapidly change shrub communities to grasses. Prescribed burns and chemical treatments work differently. Burning is the preferred tool; it is less costly and extremely effective in eliminating big sagebrush and, to a lesser extent, juniper that is invading sites with deep soil adjacent to historic shallow soil habitat. Sagebrush has "invested" a large amount of its energy and biomass in the production of above ground woody material.

Grasses store their carbohydrates below the ground in the root system (see Appendix G). Therefore, when a sagebrush-grassland is burned, the sagebrush is killed while grasses sprout from the roots. These grasses then have a chance to grow without heavy competition from sagebrush.

Some species of shrubs such as rabbitbrush and greasewood are known to sprout from the roots. A prescribed burn in an area with a significant amount of these species can actually increase the vigor and density of these shrubs. Studies of the Minnies Gap fire and the Sugarloaf burn demonstrate this hazard (Cagney, 1981-82).

Table 2-11 shows the fire susceptibility of some of the major species in the area. It is imperative that any community slated for prescribed burning be evaluated as to current species composition and fire susceptibility of these species in order to make reasonable predictions as to post-fire community.

In a chemical treatment a herbicide which is selective for shrub species is sprayed or applied as pellets to the treated area. Grasses are favored, whereas many perennial broadleafed forbs and shrubs are killed or greatly reduced by the application of 2, 4-D (Anderson 1969). After a chemical treatment or burn the target species may suffer a 30 to 95% decrease over the designated area, depending on the success of application. The forage production estimates (see Appendix D) in the livestock grazing section assume a high rate of kill for target species.

It is imperative that treated areas are rested from grazing. In general, young plants following treatment need time to stabilize the site. In the study of the Minnies Gap fire, Cagney (1981-82) observed numerous thickspike wheatgrass seedlings uprooted and laying on the soil. It was hypothesized that in the first year following a fire, seedlings do not have root systems capable of withstanding grazing. When cattle attempt to graze these plants, the entire plant and root system is uprooted rather than clipped. The livestock drop the plant since there is so much dirt clinging to the root system. This process is obviously detrimental to sustained forage production. By failing to rest a site, shrub species are given a better chance to quickly reinvade the site.

Table 2-11

RELATIVE RESPONSE TO BURNING OF MAJOR PLANT SPECIES IN SALT WELLS-PILOT BUTTE AREA

Severely Damaged	Slightly Damaged	Undamaged
SHRUBS		
Bitterbrush	Mountain mahogany	Ceanothus (sprouting)
Big sagebrush	Snowberry	Horsebrush
Black sagebrush	Serviceberry	Rabbitbrush
Broom snakeweed		
Ceanothus (nonsprouting)		
FORBS		
Fleabane	Astragalus	Arrowleaf balsamroot
Pussytoes	Penstemon	Common cocklebur
Eriogonum	Indian paintbrush	Common sunflower
	Pinnate tansy mustard	Flixweed tansy mustard
	Scarlet globemallow	Foothill deathcamas
	Sticky geranium	Goldenrod
	Lupine	Groundsel
	Wild lettuce	Longleaf phlox
		Russian thistle
		Western yarrow
		Wild onion
GRASSES		
Needle-and-thread	Bluebunch wheatgrass	Cheatgrass
Threadleaf sedge	Big bluegrass	Crested wheatgrass
	Columbia needlegrass	Intermediate wheatgrass
	Indian ricegrass	Prairie junegrass
	Nevada bluegrass	Riparian wheatgrass
	Squirreltail	Sandberg bluegrass
	Western needlegrass	Thickspike wheatgrass
		Western wheatgrass

Source: Wright, et al. 1978.

Both sprays and burns, if located in heterogenous communities, would damage nontarget areas. This would occur if a spray or burn drifts into an area not intended for treatment. Pockets of rangeland not intended for treatment may occur within an area designated for treatment.

Climatic and edaphic conditions of the manipulated community are considered in determining how long the manipulations would last. It is unlikely in this area that any of the treatments would be grasslands after 30 years. However, it is believed that a properly conceived grazing system would assist in retaining the benefit of the vegetation treatment. Treated sites should retain forage to stock the area through the long term at a rate equivalent to "good" by the ecological range site guides.

Should a treatment be performed in the absence of initial rest, and without a grazing system, brush could begin reinvasion immediately, depending on the area, and would generally approach pretreatment levels anywhere from 12 to 30 years.

Treatment of noxious weeds in the area would have no significant impact. No threatened or endangered plant species would be impacted by the proposed action.

Continuation of Existing Situation

Livestock, particularly cattle, are expected to continue to heavily utilize high production sites near or next to water sources. Most of these areas are currently in fair condition. Under current management practice, these areas would continue to be heavily utilized. Preferred species would continue to be defoliated, leading to a reduction in vigor and density. As preferred plants are depleted, plants less palatable to livestock would increase. Livestock would continue to utilize these areas, selecting the most palatable species present leading to a repetition of the cycle. Gradually there would be a loss of vegetative cover, influencing erosion on the site, and a change in species composition of the community. This process would lead to an overall reduction of livestock forage available and a reduction in range condition. It is not expected that this would happen on sites in good to excellent condition, as these sites generally are inaccessible or a great distance from water.

There would be no increase in forage production from improved condition due to improved distribution or from vegetation manipulations. The areas considered the most likely to be degraded are riparian vegetation, sagebrush communities

close to water sources, aspen/cottonwood/willow communities, and wet meadows.

The Henrys Fork and Fourth of July allotments are exceptions to this. Both allotments are currently managed under AMPs. In these allotments there would be an increase in forage production due to increased vigor. Increased vigor, seed production, and regeneration would be possible under intensive grazing management.

Emphasize Livestock Production

The potential impacts from this alternative would be similar to those under the proposed action. However an increase in available forage is expected since more water developments and more vegetation manipulation projects have been proposed. These proposals would lead to more even utilization of the range. In addition to new water developments, this alternative includes treatment of an additional 39,318 acres of sagebrush areas that were deleted from the proposed action because of resource conflicts. As the stocking rates are increased in response to forage availability, the impacts of grazing would be seen on more acreage. The entire ecosystem would then be managed for grazing, largely eliminating any ungrazed "natural community" areas within the boundaries of the area. Under intensive grazing management, the condition of many areas would improve to fair and good after 70 years. There would still be heavily used sacrifice areas which may suffer negative impacts due to increased numbers of livestock.

Emphasize Watershed, Wildlife Habitat, and Soil Stability

In this alternative areas now in good to excellent condition due to nonuse by livestock would probably remain in that condition. The decrease in proposed new water developments would prevent cattle from utilizing many areas, which are currently too far from water. There would be an increase in production from grazing systems. The increase is production from vegetation treatments would also be reduced in relation to the proposed action since less acreage would be targeted for manipulation. A major benefit of this alternative would be the protection afforded to riparian communities. In these areas cover, diversity, and reproduction should improve.

License No Livestock Use on Public Lands

This alternative would enable the various communities to recover vigor, seed production, regeneration, vegetative cover, and litter accumulation. However, since the livestock remaining in the area would not be subject to a grazing treatment, certain preferred sites would continue to be overused. The acreage of these preferred heavy use areas would diminish. Other sites would show a slow steady progression to a stable climax community. Species diversity would probablyincrease in the majority of the communities. This alternative would have the most positive impact on the vegetation resource. Production on various sites might reach or be above the production levels indicated by the SCS range site guide. On other sites the production, cover, and regeneration levels would probably remain the same.

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Poisonous Plants/Noxious Weeds

There is no expected decrease in the low levels of poisonous plants due to improved management practices. Most of the poisonous plants are native plants. Halogeton is the only species which should show a decrease under management.

Noxious weed levels may be kept to a minimum due to good management practices. Wyoming Weed and Pest Supervisors would reduce the amount of perennial pepperweed through an active spray program.

Table 2-12

ACREAGE AND LAND OWNERSHIP BY ALLOTMENT
IN SALT WELLS-PILOT BUTTE AREA

Allotment	Public Land	Other Federal	State	Private	Total
Fourth of July	9,791	0	1,000	10,795	21,586
Rock Springs (north of I-80)	405,766	38,704	18,490	492,569	955,529
Rock Springs (south of I-80)	540,641	58,658	16,000	517,419	1,132,718
Sage Creek	10,275	639	1,040	12,401	24,355
Circle Springs	8,875	0	1,200	12,226	22,301
Rife	21,783	0	640	22,282	44,705
Vermillion Creek	139,551	0	7,618	2,024	149,193
Alkali Creek	26,855	0	2,331	40	29,226
Crooked Wash	10,953	0	150	40	11,143
Horseshoe Wash	7,086	0	468	109	7,663
Pine Mountain	60,961	0	7,255	2,762	70,978
Red Creek	53,380	0	6,577	4,081	69,038
Salt Wells	43,075	0	8,140	1,980	53,195
Sugarloaf	75,940	9,951	4,714	1,380	91,985
Spring Creek	36,917	5,830	2,000	725	45,472
Henrys Fork	306,143	20,545	6,700	6,000	339,388
Hickey Mountain	6,566	0	640	1,201	8,407
Larson	1,036	0	0	907	1,943
Stag Hollow	1,889	0	0	0	1,889
Donohoo	945	0	0	47	992
Poison Creek	699	0	0	25	724
Bald Hills	5,087	0	0	430	5,517
Hanks	3,393	0	0	178	3,571
Hisey Hollow	865	0	0	53	918
Cedar Point	1,440	0	0	0	1,440
Antelope Wash	7,847	0	0	289	8,136
Circle Bar	646	0	0	6	652
Sage	2,410	0	0	0	2,410
Cottonwood	4,557	0	0	131	4,688
Peoples Canal	1,235	0	426	546	2,207
Mellor Mountain	62,046	0	6,970	1,297	70,313
TOTALS	1,863,653	134,327	92,359	1,091,943	3,182,282

Threatened and Endangered Plants

There would be no impact, negative or beneficial, to any listed federal T&E species or BLM sensitive species.

LIVESTOCK GRAZING

Affected Environment

The area contains a wide variety of sizes and types of livestock operations. For example one operator has a grazing preference of 35 AUMs; while a grazing association has a grazing preference of 94,274 AUMs. Total federal use in the area is 197,971 AUMs.

Each operator has a grazing permit in a particular allotment. Some operators having grazing permits in many allotments, and most allotments have more than one livestock operator (Table 1-18). The current stocking rate, season of use, and kind of livestock are shown in Tables 1-6, 1-9, and 1-11. The area contains 3,182,282 acres divided into 30 allotments. Table 2-12 shows the acreage by land status. Cattle, sheep and, to a lesser extent, domestic horses, utilize the area in both winter and summer. However the bulk of the total use by sheep in the winter. Sheep account for approximately 89% of the authorized use. Summer cattle use is predominant in the south and southwest portion of the area. The kind of livestock in the area appears to have stabilized. Only one request for conversion of kind of livestock in this area has been received in recent years.

In addition to the acreage involved in management, 112,000 acres not involved in management fall within the boundaries of the area. This includes fenced private land; the Seedskadee Wildlife Refuge; the towns of Rock Springs, Green River, Superior, and Reliance; the water surface of Flaming Gorge; Bridger and Black Butte coal mines; etc.

Environmental Consequences

Proposed Action

The effects of the proposed action would vary greatly with respect to categorical management. Maintain and custodial allotments would have no significant change in present management under the proposed action. These allotments are currently in satisfactory condition and are expected to remain in an overall condition similar to what exists today. Exceptions to this rule include preferred sites near water, which are expected to decline in productivity as described in the Continuation of Existing Situation Alternative and the effect of continuous grazing in the absence of periodic rest or deferment (Appendix G).

Nearly all the impacts associated with the proposed action would occur in the improve category allotments.

These "I" allotments would become more productive after implementation of the allotment management plan (AMP) and associated projects. These AMPs consist largely of water development, vegetation treatment, and a coordinated grazing system designed to best utilize resources. Table 2-13 shows the changes in AUMS projected as a result of the management program, and the expected benefits which would be utilized by the livestock industry. The methodology utilized in deriving these AUMs is explained in Appendix D.

Water developments would promote better distribution of livestock on the range by providing water in areas which currently receive a limited amount of grazing use. Conversely, when animals are utilizing the areas facilitated by new water development, less grazing pressure is exerted on traditional heavy use areas. No new AUMs would be licensed as a result of water development. This forage is already included in the resource base used to determine existing stocking rates. Caution must be taken in incorporating water development into an allotment management plan. Indiscriminant water development can lead to unintended summer use of livestock, wild horses, and wildlife in traditional winter ranges.

Vegetation treatments can increase livestock forage as described in the vegetation section. The AUM estimates on Table 2-13 assume that treated areas are rested from grazing use for two growing seasons. The studies on the Minnies Gap fire (available for review at the Salt Wells Resource Area Office) show the value of this initial rest period. Furthermore, the sustained value of these vegetation manipulations is based on periodic rest via a grazing treatment.

The grazing systems on Table 1-7 describe a basic system which would incorporate the principles and objectives described in Appendix G.

Sound grazing management would be employed in a fashion that satisfies plant growth requirements; favors desirable plants; and is adapted to soil conditions. These three conditions would be tempered by their practicality for the livestock operators involved. Any grazing treatment would be flexible enough so it can be adapted to abnormal climatic years or economic conditions.

Individual grazing treatments are intended to increase the amount of desirable range vegetation. Increased gains per acre (AUMs) would result from the production of a greater amount of forage and more efficient use of it. However, these treatments do not necessarily increase individual weight gains per animal. A treatment that concentrates the breeding herd on a smaller area than the livestock traditionally utilize may increase breeding efficiency (Jefferies 1970).

Continuation of the Existing Situation

Implementation of this alternative would result in a gradual decline in resource values which would eventually decrease livestock carrying capacity.

As the forage base decreases (see Appendix G and the vegetation section of this chapter), it would become more difficult for existing stocking rates to be maintained. Since few water developments would be implemented, large acreages (the entire unsuitable and potentially suitable acreage listed in Appendix D) would be underutilized during the warm weather months that correspond to the growing season. Conversely preferred sites would continue to be heavily used. Since no grazing treatment or vegetation manipulation is proposed, the forage base would not increase except in some isolated areas which are underutilized during the growing season. Table 2-14 shows the expected decline in stocking rates for this alternative. The rationale used to estimate the declining productivity of preferred sites is described in Appendix D.

As preferred sites become less productive, stock would be forced into more marginal areas. Calf weights and productivity would also decline as animals are forced to move farther between forage and water. This loss of productivity would be most predominant on summer cattle ranges. Sheep are herded and therefore less susceptible to this deterioration of preferred sites. For allotments in which the use is predominantly by sheep in the winter, stocking rates would probably be maintained through the 30-year (long-term) period. However, some localized areas may show decreased productivity. Table 2-14 shows only allotments which are categorized as "I" in the proposed action. This type of data has not been compiled for "M" and "C" allotments. However, it is assumed here that the "M" and "C" allotments are basically acceptable and would continue to be so, except for localized heavy use areas. Actual changes in stocking rates would be adjusted based on monitoring data.

Table 2-13

AUM PROJECTIONS IN "I" ALLOTMENTS AS A RESULT OF MANAGEMENT UNDER THE PROPOSED ACTION

Allotment	(+) Current Stocking Rate (AUMs)	(+) Additional AUMs From Grazing Treatment	(+) Additional AUMs From Vegetation Treatment	(-) AUMs Not Available Due to Unsuitability	Total AUMs	(-) AUMs Withheld For Watershed, Wildlife, and Soil Resources	Expected Stocking Rate After 30 Years	AUM Change (+) or (-)
Red Creek	7,261	734	301	116	8,180	(-) 54	8,126	(+) 865
Salt Wells	4,658	729	282	106	5,563	(-) 222	5,341	(+) 683
Pine Mountain	10,566	1,048	909	15	12,508	(-) 213	12,295	(+) 1,729
Vermillion Creek	15,066	944	204	24	16,190	0	16,190	(+) 1,124
Spring Creek	4,398	75	258	128	4,603	0	4,603	(+) 205
Mellor Mountain	9,162	1,301	512	13	10,962	0	10,962	(+) 1,800
Circle Springs	2,406	370	103	90	2,789	0	2,789	(+) 383
Sugarloaf	7,422	793	674	49	8,840	0	8,840	(+) 1,418
Henrys Fork	32,348	1,567	2,302	355	35,862	0	35,862	(+) 3,514
Sage Creek	2,345	330	11	311	2,375	0	2,375	(+) 30
Hickey Mountain	786	46	69	27	874	0	874	(+) 88
Horseshoe Wash	607	38	37	4	678	0	678	(+) 71
Antelope Wash	461	57	0	13	505	0	505	(+) 44
Crooked Wash	2,292	51	35	0	2,378	0	2,378	(+) 86
Hanks	603	43	121	0	767	8	759	(+) 156
Cottonwood Creek	436	28	42	44	462	0	462	(+) 26
Bald Hills	925	59	182	24	1,142	0	1,142	(+) 217
Fourth of July	1,883	66	0	17	1,932	0	1,932	(+) 49
TOTALS	103,625	8,279	6,042	1,336	116,610	(-) 497	116,113	(+)12,488

1/ These figures result from increased forage projections that would exceed suspended preference. Under this alternative, one-half of all AUMs in excess of suspended preference would be licensed for livestock use and one-half would be reserved for other uses.

Table 2-14

AUM PROJECTIONS IN "I" ALLOTMENTS AS A RESULT OF MANAGEMENT UNDER THE CONTINUATION OF THE EXISTING SITUATION ALTERNATIVE

Allotment	Current Stocking Rate (AUMs)	(+) Additional AUMs From Grazing Treatment	(+) Additional AUMs From Vegetation Treatment	(-) AUMs Not Available Due to Unsuitability	Total AUMs Currently Available	AUMs Expected To Be Lost (-) Due to Degradation of Preferred Sites	Expected Stocking Rate After 30 Years	AUM Change (+) or (-)
Red Creek	7,261	0	0	596	6,665	844	5,821	(-) 1,440
Salt Wells	4,658	0	0	433	4,225	1,160	3,065	(-) 1,593
Pine Mountain	10,566	0	0	279	10,287	858	9,429	(-) 1,137
Vermillion Creek	15,066	0	0	108	14,958	872	14,086	(-) 980
Spring Creek	4,398	0	0	309	4,089	274	3,815	(-) 583
Mellor Mountain	9,162	0	0	66	9,096	829	8,267	(-) 895
Circle Springs	2,406	0	0	90	2,316	456	1,860	(-) 546
Sugarloaf	7,422	0	0	425	6,997	1,134	5,863	(-) 1,559
Henrys Fork	32,348	1,991	0	909	33,430	0	33,430	(+) 1,082
Sage Creek	2,345	0	0	392	1,953	219	1,734	(-) 611
Hickey Mountain	786	0	0	108	678	78	600	(-) 186
Horseshoe Wash	607	0	0	4	603	69	534	(-) 73
Antelope Wash	461	0	0	33	428	49	379	(-) 82
Crooked Wash	2,292	0	0	0	2,292	55	2,237	(-) 55
Hanks	603	0	0	0	603	137	466	(-) 137
Cottonwood Creek	436	0	0	99	337	66	271	(-) 165
Bald Hills	925	0	0	48	877	221	656	(-) 269
Fourth of July	1,883	66	0	17	1,932	0	1,932	(+) 49
Totals	103,625	2,057	0	3,916	101,766	7,321	94,445	(-) 9,180

Emphasize Livestock Production

This alternative differs from the proposed action in the number of projects proposed and the increased utilization of forage gained through management.

It is expected that livestock numbers could increase on a sustained yield basis, without reducing overall weight gains, etc., due to increased forage availability from water development, vegetation manipulation, and grazing treatments. In addition less competition with other grazing animals would allow additional livestock use. Table 2-15 shows the estimated forage available under this alternative and the projected stocking rates.

Emphasize Watershed, Wildlife Habitat, and Soil Stability

Implementation of this alternative would freeze livestock at existing stocking rates, although forage is expected to increase due to range improvements. Livestock operators would benefit from these improved conditions through increased weight gains and productivity, but they would have the additional responsibility for implementing a grazing treatment.

Conversions from sheep to cattle would be more difficult to implement, since the alternative as proposed would preclude conversions in many allotments.

Table 2-16 shows the estimated forage available under this alternative and the projected stocking rates.

License No Livestock Use on Public Lands

This alternative gives livestock operators a choice of running livestock in number equal to the currently recognized grazing capacity of their private lands over the entire allotment, with an exchange of use agreement, or of running their livestock exclusively on their private lands. BLM cannot predict which operators would choose to run via exchange of use agreements, but it is anticipated that the exchange option would be accepted in most operations. Under either option, operators would probably have to reduce numbers, purchase additional hay, or obtain other grazing lands. It is considered infeasible to physically separate private and federal lands in the area. More than 6,500 miles of fence would be required to separate the private and public lands in the checkerboard alone.

Should operators utilize the exchange option, continuous grazing of preferred sites would result, but at a stocking rate low enough that ample forage would remain. It is expected that weaning weights and productivity would increase. Only the most preferred sites would receive heavy use; therefore, little trailing to and from water should be required. However, as animals scatter across allotments, additional operator supervision would be required to assure successful breeding.

Range projects sponsored by the BLM would not be appropriate, but a skeleton staff would be required for range supervision. Under this approach it is anticipated that some livestock operators may exceed authorized grazing levels.

WILD HORSES

Affected Environment

Wild free-roaming horses are found east of Flaming Gorge Reservoir and the Green River to the east boundary of Salt Wells-Pilot Butte area. All of one and portions of three proposed Wild Horse Herd Management Areas (HMAs) are contained within the area. In the Big Sandy Resource Area, the White Mountain and Divide Basin HMAs are only partially contained in the Pilot Butte area. The majority of these HMAs extend north of the Pilot Butte area. The two HMAs in the Salt Wells Resource Area include the Adobe Town and Salt Wells Creek herds. The Salt Wells Creek HMA is entirely within the resource area, while the Adobe Town HMA is managed in conjunction with the Divide Resource Area of the Rawlins District. Refer to Map 1-3 for location of each HMA. The February 1982 wild horse census is shown in Table 2-17, as well as the numbers of horses removed during fiscal year 1982, and the present populations. Management levels for each Wild Horse Management Area are also found in the table.

Wild horses presently occupy seven allotments in the Salt Wells-Pilot Butte area. Table 2-18 shows the estimated present population in these allotments, although these numbers are variable.

Table 2-15

AUM PROJECTIONS IN "I" ALLOTMENTS UNDER THE EMPHASIZE LIVESTOCK PRODUCTION ALTERNATIVE

Allotment	Current Stocking Rate (AUMs)	(+) Additional AUMs From Grazing Treatment	(+) Additional AUMs From Vegetation Treatment	(-) AUMs Not Available Due to Unsuitability	Total AUMs	(-) AUMs Withheld For Watershed, Wildlife, and Soil Resources	Expected Stocking Rate After 30 Years	AUM Change (+) or (-)
Red Creek	7,261	656	613	55	8,475	0	8,475	(+) 1,214
Salt Wells	4,658	576	1,190	106	6,318	0	6,318	(+) 1,660
Pine Mountain	10,566	1,038	941	15	12,530	0	12,530	(+) 1,964
Vermillion Creek	15,066	944	204	10	16,204	0	16,204	(+) 1,138
Spring Creek	4,398	34	496	59	4,869	0	4,869	(+) 471
Mellor Mountain	9,162	991	1,601	13	11,741	0	11,741	(+) 2,579
Circle Springs	2,406	369	111	22	2,864	0	2,864	(+) 458
Sugarloaf	7,422	783	724	49	8,880	0	8,880	(+) 1,458
Henrys Fork	32,348	1,370	3,383	258	36,843	0	36,843	(+) 4,495
Sage Creek	2,345	330	11	119	2,567	0	2,567	(+) 222
Hickey Mountain	786	45	90	0	921	0	921	(+) 135
Horseshoe Wash	607	38	37	4	678	0	678	(+) 71
Antelope Wash	461	52	44	2	555	0	555	(+) 94
Crooked Wash	2,292	51	35	0	2,378	0	2,378	(+) 86
Hanks	603	40	136	0	779	0	779	(+) 176
Cottonwood Creek	436	28	42	32	474	0	474	(+) 38
Bald Hills	925	53	216	0	1,194	0	1,194	(+) 269
Fourth of July	1,883	66	0	17	1,932	0	1,932	(+) 49
TOTALS	103,625	7,464	9,874	761	120,202	0	120,202	(+)16,577

Table 2-16

AUM PROJECTIONS IN "I" ALLOTMENTS AS A RESULT OF MANAGEMENT UNDER THE EMPHASIZE WATERSHED, WILDLIFE HABITAT, AND SOIL STABILITY ALTERNATIVE

Allotment	Current Stocking Rate (AUMs)	(+) Additional AUMs From Grazing Treatment	(+) Additional AUMs From Vegetation Treatment	(-) AUMs Not Available Due to Unsuitability	Total AUMs	(-) AUMs Withheld For Watershed, Wildlife, and Soil Resources	Expected Stocking Rate After 30 Years	AUM Change (+) or (-)
Red Creek	7,261	889	166	549	7,767	506	7,261	No change
Salt Wells	4,658	729	282	363	5,306	648	4,658	No change
Pine Mountain	10,566	1,051	893	15	12,495	1,929	10,566	No change
Vermillion Creek	15,066	949	179	38	16,156	1,090	15,066	No change
Spring Creek	4,398	102	0	228	4,272	0	4,272	- 126
Mellor Mountain	9,162	1,304	506	13	10,959	1,797	9,162	No change
Circle Springs	2,406	370	103	160	2,719	313	2,406	No change
Sugarloaf	7,422	802	638	49	8,813	1,391	7,422	No change
Henrys Fork	32,348	1,750	1,330	681	34,747	2,399	32,348	No change
Sage Creek	2,345	330	11	311	2,375	30	2,345	No change
Hickey Mountain	786	46	69	81	820	34	786	No change
Horseshoe Wash	607	38	37	4	678	71	607	No change
Antelope Wash	461	57	0	30	488	27	461	No change
Crooked Wash	2,292	51	35	0	2,378	86	2,292	No change
Hanks	603	66	0	0	669	66	603	No change
Cottonwood Creek	436	35	0	57	414	0	414	- 22
Bald Hills	925	93	0	96	922	0	922	- 3
Fourth of July	1,883	66	0	17	1,932	49	1,883	No change
TOTALS	103,625	8,728	4,249	2,692	113,910	10,436	103,474	- 151

Table 2-17

WILD HORSE CENSUS AND MANAGEMENT NUMBERS

Wild Horse Area	Population 1/ as of Feb. 1982	Horsea Removed in 1982	Population 1/ as of Feb. 1983	Management Numbers
White Mountain 2/	161	0	154	100
Divide Basin 2/	731	502 3/	806	150
Salt Wells Creek	743	200	957 4/	365
Adobe Town	271	0	399 4/	235
Total	1,906	702	2,316	850

1/ Population figures from BLM Wild Horse census
2/ Figurea represent only the checkerboard portion of the HMA.
3/ Also includes horsea gathered outside of the proposed HMA.
4/ Numerous horses from the Rawlins District apparently had migrated to the Rock Springs side of the District line in February of 1983.

Table 2-18
ESTIMATED WILD HORSE NUMBERS BY ALLOTMENT

Allotment	February 1983 Estimated Wild Horses
Rock Springs	2,056
Rife	35
Salt Wells	90
Vermillion Creek	40
Mellor Mountain	50
Alkali Creek	25
Circle Springs	20
TOTAL	2,316

Horses are known to cross allotment lines in their daily movement. No major migration of horses is known to exist, but horses in the Big Sandy Resource Area tend to drift north out of the Pilot Butte area in the summer months, and back into the area for the winter months. Horses in the Salt Wells Resource Area move to higher elevations such as Aspen Mountain, Mellor Mountain, and Kinney Rim during the summer months. Horses in the Adobe Town HMA routinely drift back and forth across the Rock Springs-Rawlins district boundary.

Inventories and horse roundups indicate the animals to be in relatively good condition. Over the years, wild horse numbers have shown an annual increase of 17.5 percent, indicating a healthy viable population. A sample of age and sex ratios of captured animals from the area are shown in Table 2-19. The animals exhibit a wide variety of colors and apparent breed origin. To date there is little indication of inbreeding.

At this time, only the right-of-way fences associated with I-80 and U.S. 191 North restrict movement of horses. Wild horses currently outside of the HMA boundaries are being removed, and populations within the HMAs are being reduced to the specified management numbers. Private land within the wild horse areas presents a management problem, because it is infeasible to keep wild horses off unfenced private land. Cooperative agreements are being negotiated with private landowners for management of wild horses in some areas.

Wild horses often develop a social structure in which the animals of a given herd divide into bands which are dominated by a lead stallion. This lead animal typically does the majority of the breeding, accomplishing this by driving subordinate males away from the mares. Within a given area, bands may develop lead and subordinate roles. This relationship is observable by behavior at waterholes.

This competitive social structure, combined with a horse's size and strength, allows the horses to dominate waterholes and compete favorably with wildlife and livestock for forage. The forage competition, with respect to diet overlap, among wild horses and other grazing animals is not fully understood. It is thought that wild horses generally utilize grasses. This would indicate that they compete most directly with cattle and elk. Wild horses have no major natural predators to control numbers. For a more complete profile of the wild horses, refer to the Big Sandy and Salt Wells URAs.

Environmental Consequences

The management numbers described in the proposed action and alternatives are the result of a long process of consultation with affected parties. These numbers represent comprehensive, multiple-use decisions, and remain the same for each alternative. Therefore, the consequences would be similar for all alternatives.

Table 2-19

AGES AND SEX RATIOS OF HORSES CAPTURED

Age Class	Number of Males	Percentage of Males in Each Age Class	Number of Females	Percentage of Females in Each Age Class	Percentage of 1/ Males and Females in Population by Age Class		Total Number of Horses in Each Age Class	Percentage of Horses in Each Age Class
				Divide Basin HMA (Checkerboard Portion) From 1977 to 1978				
Foals	141	23.6	134	15.2	51.2	48.8	275	18.6
1 - 2 years	192	32.5	251	28.3	43.3	56.7	443	29.9
3 - 4 years	97	16.2	206	23.4	32.0	68.0	303	20.5
5 - 11 years	114	19.1	236	26.8	32.6	67.4	350	23.6
12 + years	53	8.9	56	6.1	48.6	51.4	109	7.4
Totals	597	100.0	883	100.0	40.3	59.7	1,480	100.0
				Salt Wells HMA in 1981				
Foals	51	21	47	18	52	48	98	20
1 - 2 years	55	23	70	27	44	50	125	25
3 - 4 years	44	18	49	19	47	53	93	18
5 - 11 years	59	25	74	28	44	56	133	26
12 + years	32	13	22	08	59	41	54	11
Totals	241	100	262	100	48	52	503	100
				White Mountain HMA from 1979 to 1981				
Foals	52	23.6	50	18.8	51.0	49.0	102	20.9
1 - 2 years	48	21.8	73	27.4	39.7	60.3	121	24.9
3 - 4 years	25	11.4	40	15.1	38.5	61.5	65	13.4
5 - 11 years	42	19.1	73	27.4	36.5	63.5	115	23.7
12 + years	53	24.1	30	11.1	63.8	36.2	83	17.1
Totals	220	100.0	266	100.0	45.9	54.1	486	100.0

The table indicates male age structure, female age structure, percentage of males and females in each age class, and age structure of all horsea captured.

1/ Totals in this column represent an average for the HMA rather than a sum of the column

Implementation of the proposed action or alternatives would reduce horse levels from recent populations in all areas where horses have existed. As a result the remaining individual horses would have reduced competition on traditional ranges.

Continued horse use is expected in four "I" allotments of the Salt Wells HMA (Salt Wells, Mellor Mountain, Circle Springs, and Vermillion Creek) which are scheduled for more intensive management; including fencing in the proposed action, and in the Emphasize Livestock Production and the Emphasize Watershed, Wildlife Habitat, and Soil Stability alternatives. The horses present a logistical problem in the Salt Wells Creek HMA. The actual implications are dependent on fence locations, which would be determined at a later date. If fencing and wild horse use are not properly coordinated, the horses could become locked into a pasture; this would result in inbreeding. The wild horse program would be most easily facilitated in the Continuation of Existing Situation and License No Livestock Use on Public Lands alternatives.

TERRESTRIAL WILDLIFE

Affected Environment

There are approximately 350 species of wildlife known or expected to occur in the planning units. The following discussion addresses the species primarily affected by livestock grazing.

Big Game Species

The Wyoming Game and Fish Department (WGFD) manages big game wildlife on a "herd unit" concept. In 1978 the WGFD developed strategic population numbers for each big game species by herd unit. These figures are periodically adjusted to reflect new information. The boundaries of the herd units do not generally match BLM resource area boundaries. Some herd units are completely within the resource areas, with common boundaries, while other herd units are only partially within the resource area boundaries. This disparity makes it very difficult to make population projections for portions of herd units within the area. It is also difficult to assign herd unit objective numbers to only part of the herd unit within the resource area. Population estimates and management objectives have been extrapolated for those herd units partially within the area. The strategic plan numbers are shown in Table 2-20. Population estimates are made by the Wyoming Game and Fish Department using a combination of post-season classifications, check station data, periodic trend counts, and a computer simulation model. Not all herd units have been simulated on the computer at this time, so populations in some cases are "best estimates." Big game habitat acreage is shown in Table 2-21.

Pronghorn Antelope

Map 2-3 shows the distribution of pronghorn antelope range in the area. There are approximately 19,600 wintering pronghorn scattered throughout the planning units. Over the past several years, pronghorn populations have been increasing, approaching, and in some cases exceeding, WGFD objectives. Most population increases can probably be attributed to mild winters over the past three years and favorable growing seasons with high productivity.

Mule Deer

Map 2-4 shows the distribution of mule deer range in the area. There are approximately 13,300 wintering mule deer throughout the area. Over the last five years some herd units have declined in population while others exhibit an increasing or stable population trend. Although the causes

Table 2-21

ACRES OF BIG GAME HABITAT

	Pronghorn	Mule Deer	Elk	Moose
Crucial Winter	110,317	565,004	116,019	0
Winter/Yearlong+	1,106,719	1,538,308	848,818	93,024
Summer*	1,660,164	361,183	198,912	0
Parturition (Fawning or Calving Areas)	Not Known	Not Known	1,837	0

+ Includes Winter/Yearlong and Winter ranges.
* Includes "Crucial Summer", "Summer/Yearlong" and "Summer" ranges.

Table 2-20

WYOMING GAME AND FISH STRATEGIC POPULATION NUMBERS*

Allotment	Antelope		Mule Deer		Elk		Moose	
	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
Rock Springs and Fourth of July	11,341	6,627	5,947	5,082	767	580	12	12
Sage Creek	50	50	400	400	50	50	---	---
Circle Springs	---	100	100	250	---	---	---	---
Rife	230	300	150	200	---	---	---	---
Vermillion Creek	795	600	800	900	---	---	---	---
Alkali Creek	300	250	150	200	---	---	---	---
Crooked Wash	400	125	100	200	---	---	---	---
Horseshoe Wash	198	50	50	50	---	---	---	---
Pine Mountain	28	500	1,000	1,300	50	100	---	---
Red Creek	38	200	1,700	1,200	150	75	---	---
Salt Wells	---	300	400	250	25	25	---	---
Sugarloaf	50	50	1,700	800	200	200	---	---
Spring Creek	65	300	1,700	250	50	50	---	---
Henrys Fork	1,800	2,300	1,330	940	60	---	---	---
Hickey Mountain	---	---	130	65	50	50	10	---
Larson	10	10	15	5	20	---	5	---
Stag Hollow	10	10	15	5	15	---	2	---
Donohoo	10	10	5	---	---	---	1	---
Poison Creek	10	10	5	---	---	---	1	---
Bald Hills	---	---	30	15	9	3	2	---
Hanks	---	---	30	16	6	2	2	---
Hisey Hollow	---	---	5	2	2	---	1	---
Cedar Point	---	---	10	5	3	1	---	---
Antelope Wash	20	20	15	7	6	2	4	---
Circle Bar	---	---	---	---	3	---	---	---
Sage	10	10	10	5	3	1	1	---
Cottonwood Creek	15	15	15	8	6	1	2	---
Peoples Canal	---	---	5	2	2	---	1	---
Mellor Mountain	388	200	400	500	---	25	---	---
TOTAL	15,768	12,037	16,217	12,657	1,477	1,165	44	12

*Game numbers are based on past observations of animal use of these areas and desired populations for the herd units a stated in Strategic Plan for the Comprehensive Management of Wildlife in Wyoming (Game and Fish Department 1978).

NOTE: Summer and winter numbers are not additive.

of these various population trends are not fully determined, it is thought that during drought conditions conflicts with livestock use increase, and the very limited availability of water have helped account for the declining and stable conditions in some areas whereas relatively mild winters and favorable growing seasons have led to some population increases in other areas.

Elk

Map 2-5 shows the distribution of elk range in the area. There are approximately 975 wintering elk within the area. The winter population is substantially larger than the summer population due to the tri-state nature of the herd in the southern portion of the area. This herd moves around the tri-state area of Wyoming, Colorado, and Utah, but tends to winter more often in Wyoming. This population has remained fairly stable, with some increases over the past five years. The Steamboat/Sand Dunes herd, which is partially located in the area, has declined drastically from 1,200 to about 500 over the same period.

Moose

Map 2-3 shows the distribution of moose range in the area. The population trend for this moose herd has been increasing over the last fifteen years, but it has apparently stabilized at or near the population objective of 600 animals; only a few of these animals are actually found in the area. The vast majority of this moose herd is found primarily across the Wyoming-Utah state line in the Uinta Mountains. Most of the moose use in the area is on privately owned land along the Henrys Fork River.

Upland Game Birds

Sage Grouse

Map 2-6 shows the location of known sage grouse strutting grounds throughout the area. General winter and summer ranges have not been identified and no population estimates are available at this time. Production data over the last five years, and analysis of harvest data over the same period, indicate that although the population fluctuates from year to year, the overall population is relatively stable.

Chukar Partridge

A small population of chukar partridge is found in the Firehole Canyon region of the Salt Wells Resource Area. These birds were introduced into this area by the Wyoming Game and Fish Department in the 1960's.

Blue Grouse

Populations of blue grouse can be found in theforested region of the Salt Wells Resource Area, ón Pine Mountain, Little Mountain, and in the vicinity of the Wasatch National Forest.

Mourning Doves

Mourning doves can be found in suitable habitat throughout the planning units. These birds prefer habitat areas where juniper trees are interspersed with open sagebrush lands. This habitat is scattered over much of the area.

Waterfowl

A variety of duck species are common during spring and fall migrations along the Green River system. Nesting waterfowl species include mallards, green-winged teal, cinnamon teal, blue-winged teal, American wigeon, gadwall, pintail, common merganser, and ruddy ducks. These summer resident species are associated with stockponds, perennial streams, beaver ponds, Flaming Gorge Reservoir, the Green River, and other water ponds. The Seedskadee National Wildlife Refuge, which borders the Salt Wells-Pilot Butte area, is a major habitat area for waterfowl. The purpose of the refuge is to provide habitat for waterfowl and other wildlife as mitigation for the habitat lost due to the development of the Flaming Gorge and Fontenelle Reservoirs.

Canada geese are summer residents and nest along the Green River and in places along the Flaming Gorge Reservoir. Nesting structures have been provided outside the area on the Big Sandy River.

Raptors

A variety of raptor species can be found throughout the planning units. Golden eagles, ferruginous hawks, red-tailed hawks, prairie falcons, kestrels, marsh hawks, Cooper's hawks, and great-horned owls are the primary raptor

Sage Grouse Strutting Ground
and Breeding Complexes (with 2 mile radius)

Seedskadee National Wildlife Refuge

Green River

Blacks Fork

Green River

Baxter

Rock Springs

Killpecker Creek

Bitter Creek

Continental Divide

Superior

Jim Bridger Plant and Coal

Point of Rocks

Bitter Creek

Black Butte Coal

Bitter Creek

Fort LaClede

Salt Wells Creek

Black Butte Creek

South Baxter

Little Bitter Creek

McKinnon Junction

Sage Creek

Currant Creek

Flaming Gorge National Recreation Area

Alkali Creek

Vermillion Creek

Red Spring Creek

Henrys Fork

McKinnon

UINTA COUNTY
SWEETWATER COUNTY

191 372 530 430 371 30 80

T 22 N
T 21 N
T 20 N
T 19 N
T 18 N
T 17 N
T 16 N
T 15 N
T 14 N
T 13 N
T 12 N

R114W R113W R112W R111W R110W R109W R108W R107W R106W R105W R104W R103W R102W R101W R100W R99W R98W R97W R96W

UTAH | COLORADO

5 0 5 10 15 Miles

N

Map 2-6
SAGE GROUSE STRUTTING GROUNDS AND BREEDING COMPLEXES
Salt Wells · Pilot Butte
Grazing Environmental Impact Statement

species which nest in the units. Winter residents include golden eagles, rough-legged hawks, goshawks, and bald eagles (along the Green River).

Predators

Coyotes are common throughout the area and are found in almost all habitat types. Coyotes are unprotected in Wyoming and can be "taken" at anytime by any legal means. One could expect to observe the coyote or its sign at any time of the year within the area.

Small Mammals/Furbearers

The bobcat is classified as a furbearer in Wyoming and has been granted protection in the form of specified seasons and limits. No population data are available, but it is felt that in suitable habitat (juniper-sagebrush-rocky outcrops) bobcats are common. The bobcat is a year-round resident but because of its secretive nature is not often observed.

An abundance of small mammals and furbearers inhabit the area. A listing of these animals can be found in Section II of the Salt Wells Resource Area URA and the Big Sandy Resource Area URA.

Threatened and Endangered Species

No threatened or endangered animal has been identified as residing within the area. Potential habitat for black-footed ferrets exists throughout the area, but surveys have failed to discover evidence of their occurrence (Biosystems Analysis 1981). Peregrine falcons are historically associated with areas near Black Butte and Pine Butte, but no birds have been reported there for several years. Bald eagles winter along the Green River and Flaming Gorge Reservoir.

Environmental Consequences

The effects of livestock grazing on wildlife habitat (food, water, cover, and space) are complex, involving interrelationships that are not clearly understood. Impacts are discussed by wildlife group except where data exist for individual species. The analysis addresses specific impacts to wildlife and habitat.

Proposed Action

Most significant impacts would occur in the long term (30 years and beyond), since habitat changes are related to changes in vegetation. Significant changes would occur on 739,000 acres in eighteen allotments; over 1,124,000 acres would remain relatively unchanged.

Management on the 18 "I" allotments would provide rest from livestock grazing and ensure moderate utilization to eventually improve rangeland condition and forage production. Significant habitat improvement, however, cannot be predicted for rest treatments on managed allotments because the specific impacts would be dependent upon the actual pasture location, fences, etc. Impacts can be projected with more certainty only after allotment management plans with specific treatments and systems are developed. Rested pastures, however, would temporarily provide increased forage and cover for wildlife (BLM 1982).

As the plant communities change in response to proposed habitat management practices, the wildlife using the vegetation would also change. Displacement of some wildlife would occur on specific pastures and allotments as the ecological condition changes in response to vegetation manipulation and because of behavioral intolerance between livestock and wildlife.

Habitat quality and quantity would probably improve in pastures rested from livestock grazing and may improve in pastures where livestock grazing is deferred. These rested pastures would also provide areas where wildlife species would not have to interact physically (e.g., nest trampling) and competitively (e.g., forage); or intermingle with livestock. Increases in forage and cover should occur in rested deferred pastures.

Allotments and pastures having turnout dates from April through June would create wildlife-livestock interactions and conflicts during one of the most crucial times for many wildlife species (late fetal development, birth, rearing of newborn, and lactation). Animals recovering from winter stress would also be affected during early spring periods.

Water developments would enhance most species' habitat, especially during summer months. By leaving the water developments unfenced, habitat for birds and small mammals would not be allowed to develop due to bank trampling and habitat destruction. Water developments on crucial

winter ranges (particularly deer and antelope) deplete winter forage through the concentration of livestock and wildlife prior to the crucial period.

Vegetation treatments would affect localized wildlife populations, especially small mammals, reptiles, and birds having small home ranges. The wildlife species inhabiting an area will probably change location as vegetation species and composition changes. Table 2-22 shows long-term predicted changes in habitat (expressed in big game numbers and hunter days) which would result from each alternative. The methodology and rationale used to determine these numbers

Pronghorn Antelope

The primary pronghorn/domestic livestock conflicts concern forage, fencing, and spatial competition between antelope, cattle, sheep, and horses. Range improvement projects would affect antelope both positively and negatively.

Water developments in dry, summer ranges help to redistribute animal use to previously little used areas. Developing water in traditional antelope winter ranges would tend to concentrate livestock and wildlife use on the areas during summer periods, reducing forage available to wintering antelope.

Proposed fences, as shown in Appendix E, are designed to manage livestock while facilitating antelope movement as much as possible. Nevertheless, allotment fences that would transect antelope winter ranges could interfere with antelope movement. Interior pasture fences and allotment boundary fences may interfere with antelope mobility and restrict distribution, concentrating parts of herds within allotments or within pastures of allotments (Salt Wells URA wildlife section, Cedar Mountain antelope discussion). Such fencing would affect antelope more than other big game animals, and the effect would be long term.

Vegetation manipulation projects (spraying or burning) would decrease antelope habitat by eliminating sagebrush. Up to 12,214 acres of winter range are being proposed for prescribed burning. This could seriously impact antelope in the Spring Creek, Red Creek, Sugarloaf, Pine Mountain, Mellor Mountain, and Vermillion Creek allotments, where the majority of antelope winter range is found. Because the purposes of the burn are to eliminate woody overstory and to encourage grass regrowth, the impacts to antelope could be serious and relatively long term. Reducing sagebrush on winter ranges effectively reduces the available winter range and can place additional stress on the animals during the most stressful time of the year. In addition to prescribed burns, 2,096 acres of yearlong habitat are proposed for chemical treatment which would reduce sagebrush and promote grasslands. Impacts of herbicide treatments to wildlife species (game animals, nongame animals, reptiles, insects, microfauna) are variable and in most cases unknown. Direct effects of 2,4-D on game animals are minimal, but indirect effects, through habitat change can be significant (Pletscher and Robel 1979). It appears that for many species of wildlife, the indirect effect of change in habitat are more significant than the actual toxic effect of the chemicals on the animals (Urness 1979). As habitat changes occur, the plant species change, followed by a change in the animal species using the habitat. With any type of vegetation manipulation, the key to benefitting pronghorn habitat lies in the extent to which the treatment produces the habitat conditions needed by pronghorn during their season of residence on the site (Yoakum 1980). Some of the habitat being proposed for spraying treatment is unsuitable pronghorn habitat because of dense, tall, or decadent shrubs; in this respect, spraying can be a valuable tool in creating more herbaceous cover (Salwasser 1980).

Winter and spring domestic sheep use on crucial antelope winter ranges would reduce forage needed to support antelope throughout the winter. Antelope and sheep compete for shrubby winter forage and spring forbs. This conflict would be most significant in the Henrys Fork Allotment.

The grazing system should result in improved wildlife forage availability and cover, because of the rest and deferred pasture systems. Protecting riparian areas from intense grazing during certain seasons of the year by spreading livestock grazing around each allotment should improve wildlife habitat, especially cover.

Mule Deer

The proposed action calls for thirteen (13) spring developments and fifty-five (55) reservoirs to be constructed throughout the Salt Wells-Pilot Butte area. Thirty-four (34) of these reservoirs and two (2) springs are located within winter ranges for mule deer and other big game animals.

Table 2-22

LONG-TERM CHANGES IN WILDLIFE NUMBERS AND HUNTER-DAYS
WHICH MAY BE EXPECTED FROM CHANGES IN HABITAT

Proposed Action

Allotment	Antelope		Mule Deer		Elk	
	Changes in Numbers	Changes in Hunter-Days	Changes in Numbers	Changes in Hunter-Days	Changes in Numbers	Changes in Hunter-Days
Red Creek	21	5	59	30	4	10
Salt Wells	53	12	20	10	3	7
Pine Mountain	76	18	84	43	9	22
Vermillion Creek	38	9	57	29	0	0
Spring Creek	8	2	3	2	1	3
Mellor Mountain	30	7	34	17	3	7
Circle Springs	10	2	10	5	0	0
Sugarloaf	6	1	48	24	17	42
Henrya Fork	147	35	31	16	0	0
Sage Creek	5	1	19	10	3	7
Hickey Mountain	0	0	2	1	1	3
Horseahoe Wash	4	1	5	3	0	0
Antelope Wash	2	0	1	0	0	0
Crooked Wsah	6	1	6	3	0	0
Hanks	0	0	2	1	0	0
Cottonwood	1	0	0	0	0	0
Bald Hills	0	0	1	0	0	0
Fourth of July	2	0	0	0	0	0
Total	409	94	382	194	41	101

Continuation of the Existing Situation Alternative

Allotment	Antelope		Mule Oeer		Elk	
	Change in Numbers	Change in Hunter-Oays	Change in Numbers	Change in Hunter-Days	Change in Numbers	Change in Hunter-Daya
Red Creek	-38	-9	-102	-52	-8	-20
Salt Wells	-87	-20	-32	-16	-5	-12
Pine Mountain	-69	-16	-81	-41	-9	-23
Vermillion Creek	-40	-9	-98	-50	0	0
Spring Creek	-54	-12	-20	-10	-5	-12
Mellor Mountain	-21	-5	-23	-12	-2	-5
Circle Springs	-14	-3	-15	-8	0	0
Sugarloaf	-11	-3	-83	-42	-30	-74
Henrys Fork	102	23	24	12	0	0
Sage Creek	-8	-2	-30	-15	-5	-12
Hickey Mountain	0	0	-9	-5	-3	-7
Horseshoe Wash	-6	-1	-9	-5	0	0
Antelope Wash	-5	-1	-1	0	0	0
Crooked Wash	-3	-1	-7	-4	0	0
Hanks	0	0	-2	-1	0	0
Cottonwood	-6	-1	-2	-1	0	0
Bald HillsJuly	0	0	-3	-2	0	0
Fourth of July	1	0	0	0	0	0
Total	-259	-60	-493	-250	-67	-165

Licenae No Liveatock Uae on Public Landa Alternative*

Allotment	Antelope		Oeer		Elk	
	Changes in Numbers	Changes in Hunter-Days	Changes in Numbera	Changes in Hunter-Days	Changes in Numbera	Changes in Hunter-Days
Fourth of July	27	6	41	21	10	25
Rock Springa	9,851	2,267	2,954	1,502	807	1,985
Sage Creek	15	3	72	36	14	34
Circle Springa	60	14	47	24	0	0
Rife	107	25	75	38	0	0
Vermillion Creek	694	160	723	367	0	0
Alkali Creek	214	49	126	64	0	0
Crooked Wash	122	24	144	73	0	0
Horseshoe Wash	31	7	35	18	0	0
Pine Mountain	497	115	4D8	207	39	96
Red Creek	84	19	297	151	26	64
Salt Wells	128	29	65	33	10	25
Sugarloaf	37	9	382	194	139	342
Spring Creek	194	45	97	49	27	66
Henrya Fork	3,409	785	505	257	0	0
Hickey Mountain	0	0	48	24	16	40
Larson	11	3	2	1	0	0
Stag Hollow	54	12	7	4	0	0
Oonohoo	23	5	0	0	0	0
Poiaon Creek	9	2	0	0	0	0
Bald Hills	65	15	81	41	7	17
Hanks	42	10	56	28	0	0
Hisey Hollow	5	1	7	4	0	0
Cedar Point	11	3	15	8	0	0
Antelope Wash	27	6	7	4	0	0
Circle Bar	0	0	0	0	0	0
Sage	30	7	4	2	0	0
Cottonwood	24	6	10	5	0	0
Peoples Canal	0	0	0	0	0	0
Mellor Mountain	196	45	296	150	14	34
Total	15,967	3,672	6,504	3,305	1,109	2,728

* In thia alternative all allotments are affected, while only "1" category allotmenta are affected in the proposed action and other alternatives. As a reault the totals for thia alternative appear dramatic when compared to thoae of the proposed action and other alternativea.

Table 2-22
(Continued)

Continuation of the Existing Situation Alternative

Allotment	Change in Numbers	Change in Hunter-Days	Change in Numbers	Change in Hunter-Days	Change in Numbers	Change in Hunter-Days
Red Creek	-38	-9	-102	-52	-8	-20
Salt Wells	-87	-20	-32	-16	-5	-12
Pine Mountain	-69	-16	-81	-41	-9	-23
Vermillion Creek	-40	-9	-98	-50	0	0
Spring Creek	-54	-12	-20	-10	-5	-12
Mellor Mountain	-21	-5	-23	-12	-2	-5
Circle Springs	-14	-3	-15	-8	0	0
Sugarloaf	-11	-3	-83	-42	-30	-74
Henrys Fork	102	23	24	12	0	0
Sage Creek	-8	-2	-30	-15	-5	-12
Hickey Mountain	0	0	-9	-5	-3	-7
Horseshoe Wash	-6	-1	-9	-5	0	0
Antelope Wash	-5	-1	-1	0	0	0
Crooked Wash	-3	-1	-7	-4	0	0
Hanks	0	0	-2	-1	0	0
Cottonwood	-6	-1	-2	-1	0	0
Bald Hills	0	0	-3	-2	0	0
Fourth of July	1	0	0	0	0	0
Total	-259	-60	-493	-250	-67	-165

Emphasize Watershed, Wildlife Habitat, and Soil Stability Alternative

	Antelope		Mule Deer		Elk	
Allotment	Changes in Numbers	Changes in Hunter-Days	Changes in Numbers	Changes in Hunter-Days	Changes in Numbers	Changes in Hunter-Days
Red Creek	19	4	68	34	6	15
Salt Wells	50	12	25	13	4	10
Pine Mountain	106	24	92	47	9	22
Vermillion Creek	59	14	64	32	0	0
Spring Creek	5	1	2	1	1	2
Mellor Mountain	109	25	88	45	4	10
Circle Springs	30	7	23	11	0	0
Sugarloaf	9	2	92	47	33	82
Henrys Fork	336	78	50	25	0	0
Sage Creek	5	1	22	11	4	10
Hickey Mountain	0	0	11	6	3	7
Horseshoe Wash	4	1	4	2	0	0
Antelope Wash	3	1	9	5	0	0
Crooked Wash	5	1	5	3	0	0
Hanks	0	0	6	3	0	0
Cottonwood	2	0	2	1	0	0
Bald Hills	0	0	9	5	0	0
Fourth of July	2	0	0	0	0	0
Total	744	171	571	290	64	158

Refer to Appendix D for a discussion of the derivation of hunter-day figures.

Water developments would tend to concentrate both livestock and wildlife use in these areas during noncrucial summer months, thereby reducing available winter forage for deer.

The proposed fences should have a minimal negative effect on deer during most of the year. Deep snow falls and severe winters (when deer are weakened physically) would make it more difficult for deer to negotiate these fences.

Sagebrush is an important winter forage for deer. Winter range areas of up to 12,214 acres are proposed for prescribed burns. The effect would be to reduce the winter forage available to mule deer. The growth of spring grasses and forbs would provide succulent spring forage; however, winter is the more stressful season and winter forage is more limiting than spring forage in most instances. Burning would improve deer spring, summer, and fall ranges, but would not improve deer winter range. Impacts on deer habitat would be more significant than the direct effect of a herbicide on the animal. Up to 2,096 acres of winter range would be affected.

Long-term use by sheep on deer winter ranges shifts succession toward a stronger grass dominance (Urness 1978). Deer winter ranges in the Pine Mountain, Vermillion Creek, Mellor Mountain, Horseshoe Wash, Crooked Wash, and Henrys Fork allotments would be negatively impacted by winter sheep use.

The overall impact of the grazing systems on deer habitat would be to improve cover and increase available forage. Fawning areas for deer in riparian habitats would be improved because of the rest provided in the rest-rotation or deferred-rotation systems. Overall, habitat would improve because the livestock use would be spread more evenly throughout the allotments, rather than concentrated along riparian areas as under the existing situation.

The riparian exclosures would have an overall positive impact on mule deer by providing fawning cover, succulent spring forage, and winter forage. Restoration of the riparian habitat would be relatively rapid with livestock grazing rest, and mule deer response to these areas would quickly follow habitat recovery.

Elk

Elk compete with livestock for forage and space, particularly in the Pine Mountain, Red Creek, Rock Springs, Sage Creek, Spring Creek, Sugarloaf, and Salt Wells allotments.

Water developments proposed in elk winter ranges would encourage more livestock and wildlife summer use and would result in poorer condition for elk winter habitat.

The proposed fences and the proposed riparian exclosure fences should have little effect on movements of elk.

The burning and spraying projects are expected to improve elk forage areas by providing greater grass and forb production, but improving elk carrying capacity is dependent on prewinter livestock grazing levels.

Rest pastures (either rested year-long, or deferred) would benefit elk in the allotments with elk habitat by providing forage areas without forage, social, and spatial competition from livestock (Knowles and Campbell 1981).

Moose

The primary conflicts between moose and livestock would be spatial and forage competition along stream bottoms and in aspen and deciduous shrub communities. Resting, deferring, or protecting riparian areas from livestock use would improve the quality of moose habitat by increasing aspen, willow, and other browse species production. However, because most of the area used by moose are directly adjacent to the Henrys Fork River and on private land, resting public land allotments away from the river is not expected to improve moose habitat.

Prescribed burning would also increase spring and early summer moose forage, but, as noted above, this treatment is not expected to improve moose habitat because the affected allotments (Cottonwood Creek, Bald Hills, and Hanks) do not furnish significant winter habitat for moose.

Sage Grouse

Water developments would enhance sage grouse habitat and possibly open up areas previously uninhabited by sage grouse to their use.

Fire can be a useful tool where sagebrush rangelands interspersed with meadows and other grassy openings have been converted to monotonous sagebrush-covered hills and valleys. Burning small areas to achieve a mosaic of food and cover areas should produce a pattern more suitable for these birds. Different stages of successional growth would be desirable in order to produce the greatest variety of forb food items. A diversity of habitat types, both in terms of food and water, should be an objective (Call 1979).

In wintering habitats, there is little place for fire. Retention of sagebrush is essential on winter ranges. Even tall, decadent sagebrush, not useful for nesting or brooding, may be important during severe winters when most other sagebrush could be covered by snow (Call 1979).

The effects of 2,4-D on sage grouse habitat may be of greater consequence to the birds welfare than the direct effects of the herbicide on the bird (Carr 1968).

The spring/early summer rest or deferrment in pastures where sage grouse strutting grounds occur (Mellor Mountain, Salt Wells, Red Creek, and Sugarloaf) would increase nesting success and enhance survival of the young. Riparian area rest, especially during the spring and summer, would be beneficial to sage grouse brood rearing because juvenile birds depend heavily on a high-protein insect diet at least until their twelfth week (Wallestad 1975), which extends into July and August (Carr 1979). Riparian areas support a more diverse and abundant insect population than sagebrush uplands and are important to sage grouse brood rearing. Deferred or rested spring grazing on riparian areas would gradually improve cover, insect food, and preferred spring forbs essential to healthy sage grouse populations.

Waterfowl

Waterfowl nesting is dependent on open water (either running or standing water) and associated habitat; e.g., cover. Water developments would not necessarily enhance waterfowl production because none of the proposed reservoirs or spring developments would be fenced. Open and free use of these waters by livestock would virtually eliminate nesting cover for waterfowl. Reservoirs in pastures which would be rested or deferred during the spring and early summer would enhance the nesting and brood rearing opportunities for waterfowl. Reservoirs in pastures which are not rested or deferred during the spring and early summer would provide little or no nesting and brood rearing habitat and would not result in waterfowl production increases.

The proposal to fence a portion of the Henrys Fork bottom in conjunction with the Ashley National Forest should enhance waterfowl habitat and lead to production increases.

Burning and spraying projects would have little impact on waterfowl because these projects would take place in sagebrush habitats, which are little used by waterfowl. Fencing would have no direct impact on waterfowl. The impacts would be indirect and related to the rest or deferred grazing described above.

Nongame Species

The major impact of the proposed action on nongame wildlife would result from changes to the habitat. In treated areas, the average numbers for most nongame species would be expected, in general, to decrease in the short term, but increase above existing population levels over the long term. Anticipated impacts over the long term would not be expected to involve creation of new habitat or direct habitat loss but rather a gradual improvement of present range condition which would affect species composition and diversity. In addition, many nongame species exhibit cyclic changes in their populations, not necessarily related to the amount and quality of their habitat.

Range improvement projects would tend to affect nongame animals on a fairly local basis. Water developments would probably impact small mammals positively by providing water, but may also have negative impacts by increasing habitat use by larger herbivores. Water developments would improve habitat for nongame birds, but many small birds are ground nesters, and increased nest destruction is anticipated from increased livestock (and wildlife) use of the area.

Burn and spray projects would impact local populations of small nongame animals, by modifying habitat. McGee (1982) found that while small mammal abundance declined immediately after burning, the phenomenon was short-lived. Within three years, small mammal numbers were near preburn levels. Herbicide applications would affect small animals in much the same way as burning. Kirkland (1978) found that small mammal populations were not significantly impacted by the application of 2,4,5-T. The seed-eating small mammals were more adversely affected because of a loss of food materials and because of a loss of cover, while the insect eating small mammals were less susceptible to the loss of either of the habitat elements.

Livestock grazing alters habitat by removing cover used by small nongame animals. Grazing tends to reduce plant species diversity (Reynolds and Trost 1980), and this decrease in forbs and grasses is most likely responsible for corresponding decreases or changes in small mammals. Johnson's data (1982) tended to refute the results of Reynolds and Trost (1980), reporting that small mammal densities were not significantly affected by livestock grazing. Johnson (1981) found that grazing may have been responsible for increasing small mammal species which require low levels of cover. Mosconi and Hutto (1981) found significant differences in bird species composition and density between a heavily-grazed riparian plot and a lightly-grazed one in western Montana. Habitats for birds were found to change (Ryder 1980) as plant composition changed due to the effects of livestock grazing. In pastures where growing season rest occurs, bird and small mammal species are more likely to successfully reproduce than in pastures which are not rested or are grazed during the growing season.

The riparian exclosures would provide a haven for nongame animals related to or dependent upon the riparian areas. The escape, reproductive, and resting cover and the availability of food and water would greatly enhance small mammals, birds, reptiles, and other nongame species, at least on a localized basis.

Threatened or Endangered Species

Since no threatened or endangered species are known to exist in the area, impacts on black-footed ferrets, peregrine falcons, and bald eagles from the proposed action and alternatives are currently undetermined. Inventory work and studies currently in progress on ferrets in northwest Wyoming should yield some insight regarding impacts on this species.

Continuation of the Existing Situation

Continuation of present management would make it difficult to attain Wyoming Game and Fish Department management goals for big game. Habitat quality and quantity would continue to decrease especially on and near riparian areas, and to a lesser extent on uplands. Better distribution of livestock and wildlife through water developments would not be achieved. Without the grazing systems described in the proposed action, habitat would continue to deteriorate. Big game mobility would not be impacted because no fences would be constructed. A reasonable estimate of wildlife losses as a result of this alternative is presented in Table 2-22.

Emphasize Livestock Production

Implementation of this alternative would negatively impact deer, antelope, and sage grouse. Water developments and vegetation treatments in big game winter ranges and sage grouse strutting grounds would cause an imbalance in winter and summer ranges. Water developments would draw summer wildlife, wild horses, and livestock into traditional winter ranges, depleting the available forage prior to the critical winter use period. Vegetation treatment would reduce the shrubs which wildlife use for forage in winter. The greatest impacts of this alternative would be suffered by sage grouse, antelope, and mule deer in sagebrush treatment areas, and on antelope and mule deer on winter ranges where waters would be developed. Table 2-22 indicates estimated changes in the big game populations as a result of this alternative.

Emphasize Watershed, Wildlife Habitat, and Soil Stability

The impacts of this alternative would be similar to the proposed action, but with more positive results for wildlife species. Elk calving would be enhanced on Little Mountain and Pine Mountain due to the restriction of livestock use until after the calving season. Winter ranges would be more capable of supporting big game animals because waters would not be developed in those areas.

Wildlife habitat would be improved by the development of grazing systems and the animals would further benefit because additional forage increases would not be reflected in additional livestock. Riparian habitats would be improved, especially in the exclosures. Waterfowl habitat would be enhanced, especially in the area on the west side of the Flaming Gorge NRA. Table 2-22 shows estimated wildlife changes that would result from implementing this alternative.

License No Livestock Use on Public Lands

Big game habitat quality and quantity would increase significantly through expansion of wildlife ranges and improved forage availability and quality.

Since competition with domestic ungulates would be drastically reduced, the habitat required for Wyoming Game and Fish Department management levels of wildlife would be exceeded.

Carrying capacity for elk would increase significantly, especially in the allotments that include Little, Pine, and Aspen mountains. Unused summer habitats would be fully utilized and winter ranges would be extended northeast through the Potter Mountain/Laney Canyon areas.

The mule deer population would likely realize an increase for a decade or two and then slowly decline as the ecological condition advanced. Eventually, populations would stabilize.

The antelope population, which is presently above Wyoming Game and Fish Department management goals, would probably not increase substantially beyond present levels. However, the antelope would possibly extend their ranges into some previously unused areas.

The moose population would probably not be affected significantly on federal lands, and no decrease is anticipated on private lands, which are more intensively managed for livestock. Sage grousepopulations would follow a similar pattern as mule deer populations; increasing until ecological conditions advance to climax, and then decreasing until stability was achieved.

CULTURAL RESOURCES

Affected Environment

Cultural resources are generally recognized as discrete areas called sites, which are located upon the land surface and within the subsurface soil zones. Cultural resource sites are finite in number and cannot be replaced.

Most archeological sites in the area are shallow, single component sites. Site types can be defined by the presence or absence of certain features or classes of artifacts or by the relative proportions of different types of artifacts (Salt Wells URA).

Cultural evidence in the area dates back 10,000 years. Throughout the continuum from that time until the historic tribes were defeated by the army in the late 19th century, American Indians left evidence of their presence. This evidence is manifested in camp sites, animal kill sites, rock art panels, stone circles, firepits, tool stone quarries, religious areas, and special use areas for vegetal food processing or animal butchering. Sometimes these sites are easily recognized—stone circles, for example. In other sites, artifacts are widely dispersed and assume a very low visibility (Big Sandy/Salt Wells Oil and Gas EA).

All cultural resource values do not have the same importance. Cultural sites are evaluated regarding their significance. Significant sites must possess integrity. Significant sites are those that: (1) are associated with events that have made a significant contribution to the broad patterns of our history; (2) are associated with the lives of persons significant in our past; (3) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or (4)have yielded, or may be likely to yield, information important in prehistory or history.

The majority of the information about cultural resources in the Salt Wells-Pilot Butte area has resulted from Class II inventory efforts that have been required as part of oil, gas, and coal development. With future developments anticipated in exploration, transmission, and other related activities, the number of acres of inventory are expected to increase (Salt Wells URA).

Because of the area's size (3,294,355 acres), a comprehensive survey to identify all historic and cultural properties that might be eligible for inclusion in the National Register of Historic Places is impossible. However, the BLM has completed an existing data inventory (Class I) of the entire area and identifies three properties that are included in the National Register and 26 properties that appear to meet the criteria for inclusion in the National Register. In addition, a field sample inventory (Class II) was conducted in the southeast corner of the study area.

More information about these inventories can be obtained upon request from the Rock Springs District Office; however, specific site information on archeological sites is confidential and will be made available only to state archeologists. The inventories were conducted in accordance with the *Programmatic Memorandum of Agreement between BLM and the Advisory Council on Historic Places,* dated January 14, 1980.

Within the Salt Wells-Pilot Butte area, there are three cultural sites which have been designated as Areas of Critical Environmental Concern (ACECs): Pine Spring, Cedar Canyon, and Natural Corral (see Map 2-7).

Environmental Consequences

Impacts of the Proposed Action

Some of the activities involved in implementation of the rangeland management program could affect historic and cultural properties. The impacts to Pine Spring, Natural Corral, and Cedar Canyon ACECs would be minimal under the proposed action as well as all the alternatives. The ACEC Management Plans would preclude certain developments, and includemitigation measures that would prevent damage to the unique values of the ACEC.

The Overland Trail and Cherokee Trail would be avoided or preserved according to established review and protection procedures. This also applies to any actions under the alternatives which would cause impacts to these historic sites.

The impact to the cultural resource from chemical treatments and prescribed burns generally would be minimal. Under the proposed action, 52,973 acres are proposed for vegetation treatment. There are a total of 20 known cultural sites located in eight of the allotments which have the potential of being disturbed by vegetation treatments (these figures also apply to the alternatives). Damage could occur to some sites once the treatment or burn exposes them and leaves them susceptible to trampling. Trampling is often intensified by accompanying erosion. Trampling could lead to the breakage and relocation of artifacts. Burning at archeological sites also diminishes the data base. The two principal methods by which scientists can date the occupation of a prehistoric site, carbon 14 and thermoluminescence, are affected by burning. Also, behavioral inferences are often based on the distribution of burnt vs. unburnt items on the site, and burning would affect the archeologist's ability to recover these types of data.

Spring and reservoir developments could severely disturb or destroy any cultural site that is located within the range project area. Removal of soil during the construction of reservoirs could destroy those portions of any site they cut through and expose buried sites whose existence was previously unknown. Exposed artifacts would be more susceptible to amateur collecting and vandalism as well as erosion and weathering. Cattle break and rearrange artifacts around water sources or in areas of heavy trailing. Sheep use tendsto be more severe as the animals spread out more, damaging a wider area, although the types of damage are the same as for cattle (BLM 1978).

The construction of fences could have a minimal impact on archeological and historic sites. The vehicles used to construct the fence and construction activities could cause some minor disturbance to the sites. Cattle congregating along fences could lead to moderate erosion of sites near the fences. Increased traffic around gates in fences could lead to severe erosion and exposure of archeological sites near them (BLM 1978).

Continuation of Existing Situation

Under this alternative, the impacts to the cultural resource be minimal. Since few range improvement projects are planned, the only impacts would be from the livestock. This would affect the cultural resource as described in the proposed action.

Emphasize Livestock Production

Under this alternative, the impacts to the cultural resource could be more severe than under the proposed action, since this alternative would implement more range improvement projects. As livestock grazing increases, trampling could increase, thereby increasing the potential damage tocultural sites. It is conceivable that with more acreage being burned or treated, that more unknown cultural sites may be uncovered, thereby warranting protective measures.

Emphasize Watershed, Wildlife Habitat, and Soil Stability

Under this alternative, the impact to cultural resources would not be as great as under the proposed action. The probability of finding/ disturbing cultural sites would be less because of the lesser number of water developments proposed in the area, as well as fewer stock numbers.

License No Livestock Use on Public Lands

Under this alternative, damage to archeological sites caused by trampling and erosion would be minimal since the number of livestock would be drastically reduced.

Disturbance to sites due to new fencing or water developments would be eliminated. There would be no significant impacts related to vegetation treatments.

VISUAL RESOURCES

Affected Environment

The Salt Wells-Pilot Butte area is characterized by low mountains and semi-aridbasins with a variety of landscapes: rolling sage plains, badlands, river bottoms, alkali flats, playa lakes, juniper hills,isolated mountain timber stands, deep canyons, and altered landscapes; e.g., farmland, mining areas, urban centers, etc. These landscapes have been classified under the Visual Resource InventoryandEvaluation System as outlined in the BLM 8400 manual. Each VRM class describes a different degree ofdscape. Further explanation on the degree ofmodification allowed in the different classes and how the VRM classes are derived are in the BLM 8400 manual (on file in the Rock Springs District Office). There are five Visual Resource Management (VRM) Classes: I, II, III, IV, and V; see Map 2-8 for general VRM classification of the area. Generally speaking Class I includes the most scenic areas and Class V, the least scenic. There are no Class I designations within the Salt Wells-Pilot Butte area, but the Flaming Gorge NRA's Forest Service rating is equivalent to BLM's VRM Class I.

Environmental Consequences

Proposed Action

No actual change in VRM class is expected under the proposed action or alternatives. Under the proposed action, the visual impact of fencing would be minimal overall; but to a certain segment of the population, this impact would be considered significant. Fences degrade natural scenic quality and are most noticeable on ridges and between pastures where one has been rested and the other grazed.

Visual impacts related to new water projects would be minimal. Usually spring developments can be installed with a minimum of visual intrusion. Reservoirs may have a more significant impact, depending especially on the location. There would be some concentrated trampling near water developments which could be considered a visual impact. However, these situations currently exist throughout the area and would not necessarily be considered significant. The visual impacts from prescribed burning and chemical treatments would be significant over the short term. Over the long term, as range conditions improve, the scenic quality would also improve.

Continuation of the Existing Situation

Under this alternative, impacts to the visual resource would not change significantly. Impacts related to fencing and trampling currently exist. Over the long term, these impacts would become more evident.

Emphasize Livestock Production

Under this alternative, the visual impacts related to fencing would not change from those under the proposed action.

WSA

ACEC

Recreation Sites

Overland Trail

Cherokee Trail

Seedskadee National Wildlife Refuge

Green River

Blacks Fork

Killpecker Creek

Continental Divide

Superior

Jim Bridger Plant and Coal

Point of Rocks

Bitter Creek

Baxter

Rock Springs

Green River

Black Butte Coal

Bitter Creek

Fort Bridger

South Baxter

McKinnon Junction

Sage Creek

Currant Creek

Flaming Gorge National Recreation Area

Uinta County

Sweetwater County

Henrys Fork

McKinnon

Red Creek

Spring Creek

Vermillion Creek

Alkali Creek

Salt Wells Creek

Black Butte Creek

Little Bitter Creek

T 22 N

T 21 N

T 20 N

T 19 N

T 18 N

T 17 N

T 16 N

T 15 N

T 14 N

T 13 N

T 12 N

R114W R113W R112W R111W R110W R109W R108W R107W R106W R105W R104W R103W R102W R101W R100W

R99W R98W R97W R96W

5 0 5 10 15 Miles

Map 2-7

WILDERNESS STUDY AREAS, AREAS OF CRITICAL ENVIRONMENTAL CONCERN, RECREATION SITES AND HISTORIC SITES

Salt Wells - Pilot Butte

Grazing Environmental Impact Statement

VRM Classes

- Class 2
- Class 3
- Class 4
- Class 5

Seedskadee National Wildlife Refuge
Green River
Blacks Fork
Continental Divide
Superior
Jim Bridger Plant and Coal
Point of Rocks
Bitter Creek
Baxter
Rock Springs
Green River
Black Butte Coal
Bitter Creek
Fort LaClede
South Baxter
McKinnon Junction
Flaming Gorge National Recreation Area
UINTA COUNTY
SWEETWATER COUNTY
McKinnon
Henrys Fork
Sage Creek
Currant Creek
Spring Creek
Red Creek
Vermillion Creek
Alkali Creek
Killpecker Creek
Little Bitter Creek
Salt Wells Creek
Black Butte Creek
191
372
371
30
80
430
530
T 22 N
T 21 N
T 20 N
T 19 N
T 18 N
T 17 N
T 16 N
T 15 N
T 14 N
T 13 N
T 12 N
R114W R113W R112W R111W R110W R109W R108W R107W R106W R105W R104W R103W R102W R101W R100W
R99W R98W R97W R96W
5 0 5 10 15 Miles

Map 2-8
VISUAL RESOURCES
Salt Wells - Pilot Butte
Grazing Environmental Impact Statement

Slightly more reservoirs and springs are proposed for this alternative than the proposed action. Therefore, impacts to the visual resource from water projects would be more significant and noticeable throughout the EIS area.

Visual impacts related to prescribed burns and chemical treatments would be the most significant under this alternative because of the larger amounts of acreage being treated.

Visual impacts related to grazing systems (rested and unrested pastures) would be more significant with increased emphasis on livestock production.

Emphasize Watershed, Wildlife Habitat, and Soil Stability

Under this alternative, visual impacts related to fencing would be about the same as under the proposed action.

Visual impacts related to springs, reservoirs, and chemical treatments would be minimal under this alternative. With fewer range developments being proposed, overall scenic quality would improve. Furthermore, as vegetation production improves, further improvements in the overall scenic quality would occur.

License No Livestock Use on Public Lands

This alternative would have beneficial impacts to the visual resource. Fencing, water developments, and vegetation treatments would be minimal; therefore, the visual resource would have an increased scenic quality throughout the area.

WILDERNESS

Affected Environment

Within the Salt Wells-Pilot Butte area, there are presently three wilderness study areas (WSAs) which have been inventoried by BLM (see Map 2-7). Two of the WSAs, Red Creek and Devil's Playground-Twin Buttes, have been considered in the Rock Springs District wilderness draft EIS. The other WSA, Adobe Town, which is in both the Rock Springs and Rawlins districts, will be addressed in a wilderness EIS to be developed by the Rawlins District during 1983.

The Devil's Playground-Twin Buttes WSA is located within the Henrys Fork Allotment and totals 24,276 acres. The Red Creek WSA is located in the Red Creek Allotment and encompasses 8,020 acres. The Adobe Town WSA is within the Rock Springs Allotment and totals 85,710 acres, some of which is located in the Rawlins District. These WSAs are currently being managed under BLM's *Interim Management Policy and Guidelines for Lands Under Wilderness Review* (December 1979).

Environmental Consequences

Proposed Action

Under this proposed action, impacts associated with vegetation treatments would be minimal. Under the BLM interim management guidelines, vegetation manipulation may be used only "for control of small areas of poisonous plants or in emergencies for control of insects and diseases when there is no effective alternative" (BLM 1979). Prescribed burning may also be used "where necessary to maintain fire dependent natural ecosystems." Further information on vegetation manipulation and grandfathered grazing operations can be found in the BLM interim management policy.

No fences, vegetation treatments, or water developments are currently proposed within the WSAS. Should developments be implemented in or near a WSA, impacts to the wilderness resource would involve surface disturbance, destruction of vegetation, soil compaction, and visual contrasts to the landscape. These impacts would result from the construction and maintenance of proposed improvements such as fences and water projects.

Under the remaining alternatives there would be no significant impacts to the wilderness study areas.

RECREATION

Affected Environment

Most of the recreation activities occurring within the area are access-oriented, as opposed to solitude-oriented. Major access-oriented activities include sightseeing, hunting, camping, picnicking, fishing, rockhounding, and off-road vehicle (ORV) use. Activities which are solitude-oriented include hiking, bird watching, and cross-country skiing.

The Salt Wells-Pilot Butte area contains the Flaming Gorge National Recreation Area which draws the majority of the visitor-day use in the area. Some of the major activities which occur along the Gorge in Sweetwater County in Wyoming include camping, watersports, fishing, picnicking, sightseeing and hunting. With the exception of hunting, which decreased in visitor-days in 1979 and 1980, and camping, which saw a sharp decline in 1979 (see Table 2-23), all visitor-day use in these activities has steadily increased over the past five years.

The only developed recreation sites on federal lands within the area are: Firehole, Buckboard Crossing, Squaw Hollow, Upper Marsh Creek, Fourteen-Mile Reservoir, and Three Patches (see Map 2-7). Firehole, Buckboard Crossing, Squaw Hollow, and Upper Marsh Creek are within the Flaming Gorge National Recreation Area and are administered by the U.S. Forest Service. Fourteen-Mile Reservoir and Three Patches are administered by the BLM. Fourteen-Mile Reservoir is used for hiking, picnicking, and as a rest stop along Highway 191 for travelers going to Farson and points north. Other developed sites within the area are unaffected by grazing.

ORV use occurs throughout most of the area, with the major use taking place during hunting season.

The Natural Corral area, located north of I-80, is used quite frequently by residents of Superior for picnicking and family gatherings. The Seedskadee National Wildlife Refuge, part of which is located within this area, draws visitors and groups interested in wildlife observation and fishing.

Winter recreation activities include snowmobiling and cross-country skiing. These activities are most prevalent in the higher elevation areas where snowfall is sufficient for complete ground cover. Flaming Gorge NRA attracts some ice fishermen, as well as snowmobilers and cross-country skiiers during the winter months. Winter sports are limited due to accessibility and lack of any developments for winter recreation activities.

Environmental Consequences

Proposed Action

Under the proposed action, the impacts caused by fencing would be minimal. Fences could increase the hazard to snowmobile users and cross-country skiiers and impede access to some areas that were open in the past. Over the long term, as people become accustomed to and aware of these new fences, the hazard to recreational users would decrease. Fencing under this proposal could affect antelope distribution, causing an impact on hunting (see Table 2-24). However, the most significant impact to hunters would be the inconvenience of opening and closing gates.

Under the proposed action, livestock trampling and accumulation of feces would make some sites less desirable to recreation users, but overall conditions should improve relative to the existing situation. Concentrations of domestic and wild animals could transmit zoonotic diseases (see Glossary) and parasites to people and their pets. Campers who use unsterilized water could contract leptospirosis (see Glossary) from carrier deer or cattle even after the animals have departed the area. A potential hazard from soil and waterborne diseases, including parasites, may occur to recreation seekers. This hazard would be related to livestock grazing (BLM 1978). Chemical treatments and prescribed burns would have a minimal impact to recreation users over the short term. An area that has been burned would not be aesthetically pleasing to most recreation users for the first few seasons following treatment. Residue from chemical treatments in the short term would be unappealing to recreation-oriented people. This is most significant in the Pine Mountain, Vermillion Creek, and the Henrys Fork allotments.

Pastures being rested would enhance the recreation opportunities in the area. In the allotments which are rested, increased wildlife activity could be expected, thereby increasing the opportunity for sightseeing and wildlife viewing.

Table 2-23

VISITDR-DAY USE IN FLAMING GDRGE NATIONAL RECREATIDN AREA
Sweetwater County, Wyoming

Recreation Activity	Visitor-Day Use 1982	1981	1980	1979	1978
1. Camping	52,400	51,700	51,400	32,000	50,200
2. Water Sports (includes Boating)	31,100	27,100	26,200	23,000	20,800
3. Fishing	13,600	12,300	12,200	12,600	12,400
4. Picnicking	5,000	3,800	3,600	3,100	2,800
5. Sightseeing	2,800	2,100	1,900	1,500	1,100
6. Hunting	2,400	2,200	2,000	2,000	2,300

Source: Pers. comm. U.S. Forest Service, Dutch John, Utah, October 14, 1982.

Table 2-24

PROJECTED CHANGES IN HUNTER-DAYS UNDER EACH ALTERNATIVE

Alternative	Antelope	Mule Deer	Elk	Moose
Emphasize Livestock Production	-54	-2	-10	0
Proposed Action	94	194	101	0
Emphasize Watershed, Wildlife Habitat, and Soil Stability	171	290	158	0
Continuation of Existing Situation	-60	-250	-165	0
License No Livestock Use on Public Lands 1/	3,672	3,305	2,728	0

1/ The changes for this alternative appear disproportionately high because the other alternatives deal almost exclusively with "i" allotments, while this alternative affects all allotments.

Most reservoirs and spring developments would not adversely impact recreation users. Proposed livestock water developments in heavily used recreation areas could present the opportunity to provide water to recreation users.

Continuation of the Existing Situation

Under this alternative there would be no significant short-term impacts to recreational users. However, the overall aesthetic appeal of the area would slowly decline over the long term, in conjunction with the decline in the vegetation resource, especially riparian areas.

Emphasize Livestock Production

There would be a decrease in the aesthetic appeal and the quality of the recreational experience found throughout the area. The impacts associated with vegetation treatments, water developments, and fencing would be the same as under the proposed action; but the effect would increase proportionally with additional developments. The potential hazard to recreation users from soil and waterborne diseases related to livestock would increase.

Emphasize Watershed, Wildlife Habitat, and Soil Stability

Under this alternative, wildlife production could increase thereby increasing the hunting opportunity. Increases in hunting success would be directly related to any increase in wildlife numbers. Positive impact to wildlife would have a positive impact on recreation.

There would be less emphasis on spring and reservoir developments; therefore, the impact to recreational users would be minimal. The impacts related to vegetation treatments would be reduced in relation to the proposed action.

The quality of nonconsumptive recreational activities (sightseeing, bird watching, picnicking, etc.) would increase from a better balance of the wildlife, livestock, and vegetation resources. Stabilization and increased diversity of the vegetation communities would improve overall aesthetics for recreation users.

A potential hazard to recreation seekers from soil and waterborne disease related to wildlife would occur under this alternative (BLM 1978).

License No Livestock Use On Public Lands

Under this alternative, with little or no fencing, the hazard to recreation users would decrease and the overall aesthetic appeal of the area would improve.

With livestock numbers reduced and the number of range improvements cut back, the overall impact to all recreation users and activities would be positive; therefore, recreation experiences would increase in quality.

LAND USE CONSTRAINTS

Existing use of Sweetwater County is predominantly open range grazing, and it is anticipated that agricultural use will continue to be the dominant use. THK Associates (1980) reported that in 1979, 96% of the county's area was used for open range grazing and 1.6% for irrigated and dryland agriculture. Urban, recreation, rights-of-way, and extractive industry developments comprise the remainder of the county's land uses. The only anticipated changes by 1990 in Sweetwater County land uses would be an increase in extractive industrial uses, with a corresponding decrease of less than 1% in open grazing (THK Associates 1980). Some urban expansion and projected trona and coal developments could decrease the total grazing land use in the long term, but not significantly. Most of the Uinta County area within the Salt Wells-Pilot Butte area is open grazing.

SOCIOECONOMIC CONDITIONS

Affected Environment

Brief History

In the late-1800's cattle production served as the major livestock industry for southwestern Wyoming. The cattle industry was enhanced with the development of the Union Pacific Railroad in the late 1860's, since meat from the livestock industry provided food for railroad workers. The railroad's demand for coal resulted in the development of mining as a major sector of southwestern Wyoming's economy. Sheep production became a part of Wyoming's livestock industry in the 1880's. Migrating bands of sheep moved in and out of the Wyoming region. The area was recognized as excellent winter range for sheep which were pastured in the surrounding mountains during the summer.

Increased use of oil and gas production for heating fuel resulted in the loss of many coal mines not controlled by the Union Pacific Railroad in the early 1900's. Union Pacific's conversion to diesel engines further decreased the demand for area coal. New mining operations were established in the early 1950's with the opening of the region's first trona mine. A large demand for coal was created in the early 1970's with the development of the Jim Bridger Power Plant. Southwestern Wyoming has become a major energy source to the nation, with more emphasis being placed on coal, oil and gas development.

Regional Economy

Background

Many livestock producers have grazing permits within the Salt Wells-Pilot Butte area, but their actual bases of operations are located outside the area. To portray the entire ranching community it will be necessary to include the lands adjacent to the area. The lands are contained in portions of Sweetwater and Uinta counties, but the entire counties will be considered in parts of the analysis.

Population

The populations of incorporated cities and towns in Sweetwater and Uinta counties are shown in Table 2-25. The communities of Granger and Wamsutter are outside the area boundary in Sweetwater County, and Evanston, Lyman, and Mountain View are outside the area boundary in Uinta County. These communities are included in the analysis because economic impact on the livestock industry would affect the neighboring communities and surrounding region.

Rock Springs, Green River, and Evanston are the principal trade centers for the two-county region, and over 70 percent of the population in the counties is contained in these three communities. Total population of Sweetwater and Uinta counties increased 127 and 83 percent,

respectively, from 1970 to 1980. County population levels prior to 1970 are shown in the Rock Springs District Social-Economic Profile (USDI, BLM 1982a).

Table 2-25

POPULATION OF INCORPORATED CITIES AND TOWNS IN SWEETWATER AND UINTA COUNTIES

County/Community	Year 1970	1980	Percentage Change
Sweetwater	18,391	41,723	127
Granger	137	177	29
Green River	4,196	12,807	205
Rock Springs	11,657	19,454	67
South Superior	197	586	197
Wamsutter	139	681	390
Uinta	7,100	13,021	83
Evanston	4,462	6,421	44
Lyman	643	2,284	255
Mountain View	444	628	41

Source: U.S. Department of Commerce, Bureau of the Census 1980. Census of Population and Housing, Wyoming. PHC80-V-52

Employment

Employment in the Sweetwater and Uinta counties is shown in Table 2-26 for 1975 and 1980. Mining is the largest employing sector in both Sweetwater and Uinta counties, with approximately 32 and 20 percent of the total wage and salary employment in 1980. Wage and salary employment by the agricultural sector was less than one percent and two percent of the total in Sweetwater County and Uinta County, respectively, in 1980. Agriculture wage and salary employment in Sweetwater and Uinta counties decreased 2.5 and 3 percent from 1975 to 1980. Farm proprietors accounted for 8.2 and 37.7 percent of all proprietors in Sweetwater County and Uinta County, respectively, in 1980. The number of farm proprietors increased 5.2 and 5.4 percent, respectively, from 1975 to 1980. Employment by place of work from 1969 to 1979 is shown by year in the Rock Springs District Social-Economic Profile (SEP).

Income

Total proprietors and wage and salary income for the agricultural sector decreased by 58 percent in Sweetwater County and increased by 50 percent in Uinta County from 1975 to 1980 (Table 2-27). Farm proprietors incomedecreased 112 and 163 percent in Sweetwater County and Uinta County, respectively, during the same time period. The agriculture sector contributed 0.2 and 1.2 percent to total labor and proprietors income in Sweetwater County and Uinta County, respectively, in 1980. Mining was the largest income producing sector, accounting for 43 and 29 percent of total labor and proprietors income in the respective county in 1980. Labor and proprietors income levels from 1969 to 1979 are shown by year in the Rock Springs District SEP.

Livestock Industry

The total numbers of cattle and calves and stock sheep on farms and ranches in Sweetwater County, Uinta County, and Wyoming from 1971 to 1981 are shown in Table 2-28. Cattle and calf numbers in Sweetwater and Uinta counties have historically followed the same general trend as Wyoming. Uinta County and Sweetwater County ranked nineteenth (tied with Washakie County) and twenty-second, respectively, among counties in Wyoming for cattle and calf numbers in 1980 (Wyoming Crop and Livestock Reporting Service 1981). In 1980 Wyoming contained approximately 1.2 percent of the total cattle and calves in the United States; and Sweetwater and Uinta counties contributed 0.05 percent to national cattle numbers.

Sheep numbers in Sweetwater and Uinta counties have also followed the same general trend as Wyoming. In 1980 Uinta County and Sweetwater County ranked seventh and eighth (tied with Washakie County), respectively, among Wyoming counties in sheep numbers. Wyoming accounted for approximately 8.75 percent of the national sheep numbers; and Sweetwater and Uinta counties contributed 0.8 percent of the total U.S. sheep numbers.

The importance of the livestock industry to the Sweetwater and Uinta county economy is discussed under the employment and income sections. The number of livestock operations utilizing the area is shown under the livestock grazing section.

Table 2-26

EMPLOYMENT IN SWEETWATER AND UINTA COUNTIES IN 1975 and 1980

Employment by Place of Work	Sweetwater 1975	Sweetwater 1980	Uinta 1975	Uinta 1980
TOTAL EMPLOYMENT	17,450	23,901	3,864	6,572
Number of Proprietors	1,187	1,469	668	778
Farm Proprietors	115	121	278	293
Non-Farm Proprietors	1,072	1,348	390	485
TOTAL WAGE AND SALARY EMPLOYMENT	16,263	22,432	3,196	5,794
Farm	117	114	101	98
Non-Farm	16,146	22,318	3,095	5,696
Private	13,920	19,251	2,029	4,585
Ag. Serv., For., Fish, Other	--	31	12	14
Mining	3,935	7,127	117	1,137
Construction	3,804	2,898	205	470
Manufacturing	285	438	141	98
Non-Durable goods	209	305	--	---
Durable Goods	76	133	133	---
Transportation/Utilities	1,293	1,920	438	776
Wholesale Trade	399	760	71	---
Retail Trade	2,172	3,261	718	1,094
Finance, Ins., Real Estate	242	413	60	141
Services	1,782	2,403	267	---
Government and Gov. Enterprises	2,226	3,067	1,066	1,111
Federal, Civilian	222	302	74	79
Federal, Military	286	218	89	65
State and Local	1,718	2,547	903	967

Source: Wyoming Department of Administration and Fiscal Control, Division of Research and Statistics 1982. Wyoming income and employment report. Fourth edition, Cheyenne, Wyoming, June 1982.

Table 2-27

LABOR AND PROPRIETORS INCOME IN SWEETWATER AND UINTA COUNTIES IN 1975 and 1980

Total Labor and Proprietors Income[1]/ - Workplace	Sweetwater 1975	Sweetwater 1980	Uinta 1975	Uinta 1980
By Type				
Wage and Salary Disbursements	189,963	426,936	25,513	88,512
Other Labor Income	11,026	33,039	1,380	5,637
Proprietors Income	9,382	11,737	2,229	3,102
Farm	1,754	-210	38	-23
Non-Farm	7,628	11,947	2,191	3,125
By Industry				
Farm	2,546	1,068	761	1,146
Non-Farm	207,825	470,644	28,361	96,105
Private	189,157	430,139	19,946	80,669
Ag. Serv., For., Fish., and Other	61	228	73	107
Mining	66,972	202,917	1,460	27,971
Construction	62,828	73,553	3,114	9,427
Manufacturing	4,124	9,488	1,268	1,456
Non-Durable Goods	2,872	6,156	--	--
Durable Goods	1,252	3,332	1,232	--
Transportation and Public Utilities	18,591	46,960	6,593	17,700
Wholesale Trade	4,895	15,652	609	--
Retail Trade	15,310	33,587	4,468	10,299
Finance, Insurance, and Real Estate	2,347	6,458	547	2,050
Services	14,029	41,296	1,814	--
Government and Government Enterprises	18,668	40,505	8,415	15,436
Federal, Civilian	3,058	6,112	878	1,333
Federal, Military	542	575	162	171
State and Local	15,068	33,818	7,375	13,932

Source: Wyoming Department of Administration and Fiscal Control, Division of Research and Statistics 1982. Wyoming income and employment report. Fourth edition, Cheyenne, Wyoming, June 1982.

1/ In thousands of dollars

Table 2-28

NUMBER OF CATTLE AND CALVES AND SHEEP ON WYOMING FARMS AND RANCHES JANUARY 1
(Reported in Thousands)

Year	1971[1]	1972[1]	1973[3]	1974[2]	1975[2]	1976[3]	1977[3]	1978[3]	1979[3]	1980[3]	1981[4]
Cattle and Calves											
Sweetwater County	15.9	16.2	17.5	18,0	19.0	21.0	20.0	18.0	21.0	20.0	18.0
Uinta County	38.7	38.7	39.0	40.0	46.0	43.0	40.0	37.0	33.0	31.0	36.0
Wyoming	1,520.0	1,550.0	1,565.0	1,600.0	1,690.0	1,580.0	1,550.0	1,280.0	1,300.0	1,340.0	1,350.0
Sheep											
Sweetwater County	134.0	124.0	143.0	102.0	96.5	84.0	76.0	56.0	57.0	52.0	92.0
Uinta County	65.3	59.5	54.0	53.0	54.0	47.0	43.0	48.0	42.0	49.0	51.0
Wyoming	1,679.0	1,561.0	1,480.0	1,347.0	1,226.0	1,103.0	1,071.0	1,010.0	960.0	96.0	990.0

1/ Wyoming Crop and Livestock Reporting Service 1975. Wyoming Agricultural Statistics, 1975.

2/ Wyoming Crop and Livestock Reporting Service 1978. Wyoming Agricultural Statistics, 1978.

3/ Wyoming Crop and Livestock Reporting Service 1980. Wyoming Agricultural Statistics, 1980.

4/ Wyoming Crop and Livestock Reporting Service 1981. Wyoming Agricultural Statistics, 1981.

Lifestyles and Attitudes

Families of ranch operators are characterized by a set of distinct attitudes and values. Ranching families have retained the outlook that is usually associated with rural, agrarian populations. They emphasize the importance of independence, self-reliance, and outdoor work. Ranch families cling to what they conceive as a western way of life, one which they inherited from pioneer settlers. Despite rather low financial returns from ranching, they persist in ranch lifestyles. In doing so, ranchers express what has been labeled ranch fundamentalism, the belief that ranching leads to a higher state of well-being than an alternative way of life (USDI, BLM 1982).

Wildlife and Recreation Values

Table 2-29 shows the estimated recreation expenditures from big game hunting (hunter-days) in the Salt Wells-Pilot Butte area and general recreation and fishing in the Flaming Gorge National Recreation Area in 1980. Recreation expenditures contribute to both state and local revenues through license sales; wholesale and retail sales; and taxes. Approximately 46 percent of the total $2.9 million in recreation expenditures could be attributed to general recreation and the remaining 54 percent is received from big game hunting and fishing.

Environmental Consequences

Analysis Guidelines

Socioeconomic impacts of the proposed action and alternatives are analyzed on the basis of direct impacts on the livestock industry and local recreation expenditures; indirect impacts on the regional economy; and social impacts. Direct impacts on the livestock industry would arise from alternative BLM management schemes and subsequent changes in livestock use of an allotment. Wildlife management levels correspond to the amount of hunting and recreational use of the area, and the economic impacts of BLM actions would be realized through recreational expenditures. Indirect impacts are measured in terms of employment, income, and population of the region; while social impacts are reflected through the lifestyles and attitudes of livestock operators and local residents.

The economic effects of BLM management actions on a single livestock operation are a function of many factors including: dependency on BLM forage; cost and availability of substitute forage sources; and financial position of the operation. Ranch economic profiles have been developed to determine the economic impact of the proposed action and alternatives on individual livestock operators and the livestock industry. Specific costs and returns along with the production assumptions for each ranch profile are shown in Appendix H. A discussion of the models and procedures used to determine ranch economic impacts is also included in the appendix. Impacts on the livestock industry from each alternative was determined for specific enterprises and then aggregated to the allotment and finally the alternative level.

Indirect impacts on the regional economy from changes in livestock production and recreation expenditures were assessed through the BLM Input/Output Model for Lincoln, Sublette, Sweetwater, and Uinta counties. Issues addressed are regional income, employment and population changes as a result of implementation of the proposed action or alternatives.

Social impacts on the livestock operators can also be determined through an analysis of the changes that occur in an individual livestock enterprise. Changes in economic conditions of a livestock operation can result in major social impacts on livestock producers and their families.

Timeframes used in this analysis are defined as: short term, being five years or less; and long term, being greater than five years but not more than thirty years. The actual time that economic impacts would occur is dependent on the change in forage supplies and livestock market conditions. The full impact from increased forage allocations would not be realized until all the forage is available and livestock market conditions permit operators to take advantage of these increases. Impacts from declining forage production would occur as the forage supply is reduced or administrative decisions are made to reduce the licensed use of the area.

Table 2-29

ESTIMATED EXPENDITURES FROM RECREATIDN USE DF THE SALT WELLS-PILDT BUTTE AREA IN 1980

Type	Estimated Population	Recreation Days [1]	Expenditures Per Hunter Day [2]	Total Expenditures
Antelope	19,600	4,508	$133.29	$600,871
Deer	13,330	6,774	73.49	497,821
Elk	975	2,401	56.77	136,305
Moose	50	54	79.20	4,277
Fishing	---	12,200	28.14	343,308
General Recreation	---	83,100	16.00	1,329,600
TDTAL		109,037		2,912,182

[1] Includes hunting, fishing, and general recreation. Recreation days for hunting are estimated using the percentage of total animals harvested and hunter days per animal estimated at 11.5, 7.7, 12.5, 18.0, and 2.0, 6.6, 19.7, 6.0, for antelope, deer, elk, and moose respectively.

[2] Expenditures per hunter and fisherman day are reported by the Wyoming Game and Fish Department, Annual Report 1981. Expenditures per general recreation day were the results of a survey conducted by Walsh et. al 1981.

Proposed Action

Under the proposed action long-term increases are expected in both ranch income and recreational expenditures. As a result the regional economy is expected to benefit from increased employment and income.

Direct Impacts

Over the long term (30 years) BLM forage allocation would increase above the existing level and livestock operators would be expected to expand their operations to capture this increase; or, in some situations, livestock operators could substitute BLM forage for other forage sources to reduce feed costs. In either case benefits are expected to accrue to the livestock operator in the form of increased ranch income (return above cash costs) as shown in Appendix H. Implementation of the proposed action is expected to increase total ranch income (return above cash costs for all area ranches, 1980 dollars) by approximately $52,000 (Table 2-30) annually, over the long term. In addition forage decreases avoided (see the Continuation of Existing Situation Alternative in Table 2-30) by implementing the proposed action would save $95,000 in ranch income, which would result in a total increase of over $147,000 in ranch income per year over the long term. Total annual livestock sales from implementation of the proposed action and foregoing the loss projected from the Continuation of Existing Situation Alternative are expected to increase by approximately $440,500 in the long term.

A financial evaluation of Colorado sheep ranches (Gee and Briskey 1982) indicated that decreases in public (BLM and Forest Service) grazing privileges adversely affected the financial position and repayment ability of ranch operations. It would be logical to assume from this study that an increase in BLM grazing privileges in the area would at least maintain, if not improve, the financial position of a livestock operation as measured through ranch market value, loan to appraised value, and debt to asset ratio. The overall economic viability of ranch operations in the area would be improved over the long-term through increased income potential and financial position.

Big game hunting would increase by 389 hunter-days per year above the existing level over the long term as a result of the proposed action, and this would increase direct recreational expenditures in the Salt Wells-Pilot Butte area by approximately $32,500 (Table 2-30) per year. In addition the loss of an estimated $35,700 in recreational expenditures per year over the long-term from continuation of the existing situation would be avoided. Therefore, a total annual increase of approximately $68,200 in direct recreational expenditures above the level projected from continuation of the existing situation would be expected over the long term.

Indirect Impacts

Implementation of the proposed action would increase direct regional income by $244,500 and employment by three above the existing situation respectively, over the long term. A total loss of

LONG-TERM ECONOMIC IMPACTS OF THE PROPOSED ACTION
AND ALTERNATIVES (In Thousands of 1980 Dollars)

Class	Proposed Action (As Compared To)		No Action (As Compared To)	Emphasize Livestock Production (As Compared To)		Emphasize Watershed, Wildlife Habitat, and Soil Stability (As Compared To)		License No Livestock Use On Public Lands (As Compared To)
	Existing Stocking Rate	Continuation of Existing Situation	Continuation of Existing Situation	Existing Stocking Rate	Continuation of Existing Situation	Existing Stocking Rate	Continuation of Existing Situation	Existing Stocking Rate
LIVESTOCK								
AUM Change 1/	12,488	21,668	- 9,180	16,577	25,757	- 151	9,029	- 197,971
Change in Ranch Income (Returns Above Cash Costs) 2/	52.0	147.0	- 95.0	69.0	164.0	- 1.5	93.5	- 1,914.4
Direct Change in Livestock Sales 2/	212.0	414.3	- 202.3	281.5	483.8	- 3.2	199.1	- 4,252.4
Indirect Business Impact 3/	225.4	440.5	- 215.1	299.3	514.4	- 3.4	211.7	- 4,521.2
Change in Regional Income	437.4	854.8	- 417.4	580.8	998.2	- 6.6	410.8	- 8,773.6
Direct Change in Agricultural Employment 4/	2	4	- 2	3	5	0	2	- 46
Indirect and Induced Employment 4/	2	5	- 3	3	6	0	3	- 52
Total Change in Regional Employment	4	9	- 5	6	11	0	5	- 98
WILDLIFE AND RECREATION EXPENDITURES								
Change in Hunter Days 1/	389	864	- 475	- 66	409	619	1,094	9,705
Direct Change in Expenditures 5/	32.5	68.2	- 35.7	- 7.9	27.8	53.1	88.8	887.2
Indirect Business Impact 3/	37.8	79.4	- 41.6	- 9.2	32.4	61.7	103.3	1,031.6
Change in Regional Income	70.3	147.6	- 77.3	- 17.1	60.2	114.8	192.1	1,918.8
Direct Change in Employment 4/	1	2	- 1	0	1	2	3	36
Indirect and Induced Employment 4/	1	2	- 1	0	1	1	2	9
Total Change in Regional Employment	2	4	- 2	0	2	3	5	45
TOTAL								
Direct Change in Regional Income	244.5	482.5	- 238.0	273.6	511.6	49.9	287.9	- 3,365.2
Indirect Change in Regional Income	263.2	519.9	- 256.7	290.1	546.8	58.3	315.0	- 3,489.6
Total Change in Regional Income	507.7	1,002.4	- 494.7	563.7	1,058.4	108.2	602.9	- 6,854.8
Direct Change in Regional Employment	3	6	- 3	3	6	2	5	- 10
Indirect Change in Regional Employment	3	7	- 4	3	7	1	5	- 43
Total Change in Regional Employment	6	13	- 7	6	13	3	10	- 53

1/ See Livestock Grazing and Wildlife Impacts sections, respectively.

2/ Derived from the linear programming models shown in Appendix N.

3/ Business multipliers of 2.06 and 2.16 for the agricultural and retail trade (including services) sectors (BLM Input/Output Model for Lincoln, Sublette, Sweetwater and Uinta Counties 1980). Business multiplier for wildlife and recreation expenditures include both resident and nonresident, and as a result total business activity may be slightly overstated.

4/ Direct, indirect, and induced employment derived from the BLM Input/Output Model. Indirect and induced employment multipliers estimated at 1.14 and 0.26 for agricultural and retail trade (including services) sectors.

5/ Expenditures per recreation day are shown in Table 2-29.

$238,000 in direct regional income and three employment opportunities would be avoided by implementing this action; and result in a total increase in direct regional income of $482,500 and employment opportunities of six above the level projected from continuation of the existing situation (Table 2-30). Total long-term increases in direct and indirect regional income and employment opportunities as a result of this alternative are estimated at $1,002,400 and thirteen, respectively. Regional population levels are not expected to be impacted as a result of this action.

Social Impacts

Lifestyles and attitudes of the ranching community and local residents are not expected to be adversely affected as a result of this action. The economic viability of ranches in the area would be maintained or improved by this action, and livestock operators would be free to manage their enterprises under conditions at least comparable, if not better, than the existing situation. Local residents would have more big game hunting opportunities in addition to increased wildlife populations for viewing by nonconsumptive recreation users.

Continuation of Existing Situation

Under this alternative, decreases in net ranch income and recreational expenditures are anticipated due to the declining range trend. The regional economy is expected to realize a slightly adverse effect from decreased income and employment.

Direct Impacts

Over the long term, BLM forage licensed for livestock grazing would decrease from the existing level and impacts on livestock operations would range between a reduction in the opportunity space for livestock producers to expand their operations to a reduction in the total herd size of an individual operation. In either situation the livestock operator could experience a loss in ranch income over the long term as forage licensed to operators. Continuation of the Existing Situation could result in a total annual loss in the long term of approximately$95,000 (1980 dollars) in ranch income and $202,300 in livestock sales, if licensed forage decreases by 9,180 AUMs (Table 2-30). Impacts on cost and returns of individual livestock enterprises from reductions in BLM forage allocations are shown in Appendix H. Livestock enterprises which are highly dependent on BLM forage; less efficient operations;and operations that are highly leveraged may not be able to adjust their operations to a decrease in BLM forage allocations. As a result these operations may be forced into liquidation. The financial position of an operation (ranch market value, loan to appraised value, and debt to asset ratio) would be adversely affected, as well as repayment ability, by a reduction in BLM grazing privileges. The overall economic viability of ranch enterprises in the area would be reduced over the long term through loss of income potential and decreases in financial position.

Big game hunting over the long term is expected to decline by 475 hunter-days per year from continuation of the existing situation. This would result in the loss of approximately $35,700 (1980 dollars) in direct recreation expenditures as compared to existing levels.

Indirect Impacts

Continuation of the Existing Situation over the long term would decrease direct regional income by $238,000 (1980 dollars) and employment opportunities by three. Business activity in the regional economy would decline by an additional $256,700, which would result in the loss of an additional four indirect employment opportunities. Total long-term direct and indirect decline in regional income and employment as a result of this action is estimated at approximately $494,700 and seven, respectively. The decline in employment opportunities is not expected to be large enough to result in a significant loss in regional population.

Social Impacts

Continuation of the existing situation is expected to adversely affect the lifestyles and attitudes of the livestock operators and local residents of the area. Decreases in forage allocation would directly impact the lifestyles of local livestock operators by reducing the economic viability of their operations. As a result some operations may be forced to liquidate, and the operators may not have the opportunity to pursue a lifestyle of their choosing. Attitudes of livestock producers could

be adversely affected by adjustments in forage allocations, whether the operator is forced into liquidation or not. Local resident attitudes could be affected by the decline in wildlife populations and subsequent reduction in consumptive and nonconsumptive recreational activities.

Emphasize Livestock Production

Under this alternative long-term increases in ranch income (return above cash costs) and decreases in recreational expenditures are projected. Total regional income and employment would be expected to increase as a result of this action.

Direct Impacts

Over the long term, BLM forage allocations are expected to increase by 16,577 AUMs above the existing level and a loss of 9,180 AUMs would be avoided by implementing this alternative. Total ranch income and livestock sales would increase by approximately $164,000 and $483,000 per year (Table 2-30), respectively, above the level projected for the continuation of the existing situation. These increases would be approximately $17,000 and $69,500 greater, respectively, than the proposed action. Impacts on costs and returns on individual livestock enterprises from increases in BLM licensed forage are shown in Appendix H. The economic viability of ranch enterprises under this alternative would be at least equal to, if not better, than the proposed action as measured through increased income producing potential and financial position of the livestock enterprises in the area.

Big game hunting in the area is expected to decrease below the existing level by 66 hunter-days per year over the long term, which would result in the reduction of $7,900 (Table 2-30) in direct recreational expenditures. The loss of $35,700 in recreational expenditures that would occur from continuation of the existing situation would be avoided by implementing this alternative. Therefore, total recreational expenditures would increase by approximately $27,800 per year in the long term above the level that is projected for continuation of the existing situation. This is approximately 41 percent of the dollar value that would be realized under the proposed action.

Indirect Impacts

Direct regional income is expected to increase by $237,600 and employment is expected to increase by three per year above the existing level over the long term. Reductions of $238,000 and three, respectively, which would be realized from continuation of the existing situation would be avoided by implementing this alternative. The total long-term direct and indirect increase in regional income and employment above the level projected for Continuation of the Existing Situation is estimated at approximately $1,058,400 and thirteen, respectively. This is an increase of 5.6 percent above the level projected for the proposed action.

Social Impacts

Lifestyles and attitudes of livestock operators are not expected to be adversely affected by this alternative, but the attitudes of local residents could be slightly affected by this action. The economic viability of ranch enterprises in the area is expected to be maintained or increased above the existing levelor the proposed action. Therefore, livestock operators would be able to manage their enterprises under conditions that are at least comparable, if not better, than the existing situation. Wildlife populations would be reduced slightly below existing levels over the long term. This may affect the attitudes of local residents if hunting or nonconsumptive recreation activities related to wildlife are restricted.

Emphasize Watershed, Wildlife Habitat, and Soil Stability

Livestock grazing privileges on BLM lands would be reduced below the existing level under this alternative, but wildlife numbers are expected to increase. This action is expected to reduce ranch income slightly below the existing situation and increase recreational expenditures.

Direct Impacts

Total ranch income would be expected to decrease by approximately $1,500 (1980 dollars) annually over the long term from implementation of this alternative, but a loss in ranch income of approximately $95,000 (from continuation of the existing situation) would be avoided by implementing this alternative (Table 2-30). Overall this

would increase annual ranch income and livestock sales above continuation of the existing situation in the long term by approximately $93,500 and $199,100, respectively. Impacts on individual ranch enterprises from reductions in BLM grazing privileges are shown in Appendix H. This alternative would have a slightly adverse affect on the financial position of ranch enterprises which receive reductions in grazing privileges below the existing situation in addition to slight decreases in the repayment ability of these enterprises. Implementation of this alternative is not expected to significantly change the economic viability or total number of livestock enterprises within the area.

Hunting for big game is expected to increase by 619 hunter-days in the long term above the existing levels, as a result of this action; and total annual recreation expenditures are expected to increase approximately $53,100 (Table 2-30). In addition $35,700 in recreational expenditures that would have been foregone from Continuation of the Existing Situation would be retained. A total long-term annual increase of $88,800 in direct recreational expenditures are expected from implementation of this alternative above the Continuation of the Existing Situation. This represents an increase in recreational expenditures of nearly 30 percent above the proposed action.

Indirect Impacts

Regional income is expected to increase by $49,900, and employment would increase by two above the existing situation over the long term as a result of this action (Table 2-30). In addition the loss of regional income and employment of $238,000 and three, respectively, would be avoided, which would result in a total long-term direct increase of $287,900 in regional income and five in employment above the level projected for Continuation of the Existing Situation. Increased business activity would result in an additional $315,000 in regional income and five employment opportunities. Total direct and indirect regional income and employment would be 60 and 77 percent, respectively, of the levels expected from the proposed action. No major change in regional population is anticipated under this alternative.

Social Impacts

Lifestyles and attitudes of the ranching community could be adversely affected by this action through slightly reduced ranch income and financial position. Opportunities for livestock operators to pursue a particular lifestyle could be restricted if the income producing ability of their operation is reduced. The attitudes of local recreationists should at least be maintained or improved through increased opportunities for consumptive and nonconsumptive recreational use of wildlife.

License No Livestock Use On Public Lands

This alternative could have a severe financial impact on the livestock operators using the area. Wildlife populations and subsequent hunting and recreation opportunities are expected to increase, which would result in increased recreational expenditures in the region.

Direct Impacts

Under this alternative livestock grazing would be eliminated from public lands, which would reduce the AUMs available to livestock operators in the area by 197,971. Ranch income and livestock sales would be reduced by an estimated $1,914,400 and $4,252,400 (Table 2-30), respectively, in the short run (assuming that all livestock operators remain in business). The projected economic impacts from reductions in BLM forage allocations on individual livestock enterprises are shown in Appendix H. Those operations which cannot cover cash costs over the long term would be expected to terminate operations, and the reduction in livestock sales and regional income would be decreased even further. The total number of livestock enterprises in the area would be expected to decrease significantly under this alternative.

The financial position of all livestock enterprises receiving reductions in BLM forage allocations would be substantially reduced under this alternative. A 25 percent reduction in BLM forage allocations on Colorado sheep ranches resulted in a 7 percent reduction in capital assets and a 16 percent reduction in market value (Gee and Briskey 1982). An even greater reduction in financial position would be expected from a 100 percent reduction of BLM grazing permits. The overall economic viability of livestock enterprises in the area would be substantially reduced through a loss of income-producing ability and decrease in financial position.

Big game hunting is expected to increase by 9,705 hunter-days over the long term, and this is expected to increase direct recreational expenditures by $887,200 (Table 2-30). This is an increase of 1,200 percent above the level projected for the proposed action.

Indirect Impacts

Direct regional income and is expected to decrease by approximately $3,365,200 and employment by 10 (Table 2-30) as a result of implementing this action. This decline in business activity would result in the additional loss of $3,489,600 in indirect regional income and 43 employment opportunities. The total long-term loss in regional income and employment is projected at $6,854,800 and 53, respectively. Loss of regional employment could result in a population decline of the area, if the economic condition of other basic industries do not provide for additional employment opportunities.

Social Impacts

Implementation of this alternative would have severe social impacts on the ranching community. Those livestock enterprises which could not pay cash costs over the long term would be forced to terminate operations, and as a result their lifestyles would drastically change. Negative attitudes could be expected toward the Federal Government and its management policies. Attitudes of recreationists would be maintained or improved through increased consumptive and nonconsumptive recreation opportunities.

PROPOSED MITIGATION MEASURES

Mitigation measures in addition to those included in the alternatives, including the proposed action, were developed following the impact analysis. The following would be appropriate for all alternatives.

1. Loamy and sandy sites have been identified for vegetation manipulation, but small pockets of other sites would almost always occur in any area of significant size. There should be less than 20% inclusion of nonsandy, loamy sites in any area planned for manipulation.
2. Top rails, lay down panels, or antelope passes may be required in localized areas, if a significant problem concerning wildlife mobility is identified.
3. To improve livestock distribution, livestock operators should locate salt away from known preferred grazing sites, especially riparian areas.
4. To avoid excessive trampling, salt would not be placed within a quartermile of known archeological or historic sites of National Register significance, major paleontological sites, or historic trails.
5. No trailing permits would be allowed that would cross known archeological, historic, or paleontological sites or along historic trails.
6. Close consultation with local operators and the Wyoming Game and Fish Department could greatly assist in correctly locating water developments, fences, and other range projects in the most environmentally suitable locations possible. BLM would attempt to utilize all available expertise to assist in the development of allotment management plans.
7. Any use of herbicides must be preceded by a thorough review of the specific area to be sprayed and an evaluation of the effects of the spray on the wildlife species present.
8. If maintenance agreements can be arranged, the proposed spring developments and portions of the proposed reservoirs would be fenced in an effort to develop riparian habitat.
9. Fences should be designed in such a manner in which the wild horses in fenced areas would be able to join other wild horses in numbers sufficient to maintain a viable herd. This would be accomplished by the use of gates, laydown panels, or strategic fence location.
10. If livestock appear to be interfering with forest regeneration following a clearcut, a temporary drift fence would be needed to prevent livestock use of these areas.

UNAVOIDABLE ADVERSE IMPACTS

Proposed Action

—Although the rate of soil loss would be reduced and stabilized in some areas, some continued loss of soil would result.

—There would be continued moderate degradation of unfenced riparian habitat.

—In the short term 52,973 acres of soil and vegetation would be disturbed by land treatments.

—Approximately 278 acres of vegetation and soil would be disturbed by range improvements.

—Water developments on big game crucial winter ranges would attract livestock and wildlife in those areas and thus deplete winter forage prior to the crucial period.

—Interior pasture fences and allotment boundary fences may restrict recreational uses, antelope mobility, and big game distribution.

—Moderate degradation of cultural resources would continue to occur.

—New projects would result in a corresponding increase in annual maintenance costs.

Continuation of the Existing Situation (No Action)

—Slow decline in wildlife habitat condition.

—Riparian a nd meadow habitat would continue to deteriorate.

—There would be continued deterioration of vegetation productivity on areas preferred by livestock.

—Poor livestock distribution would result in continued nonuse of some areas.

—Degradation of cultural resources would continue to occur.

—There would be an eventual loss of 9,180 AUMs and $95,000 in annual ranch income.

—Reduction in regional income would be approximately $494,700.

Emphasize Livestock Production

—Although the rate of soil loss would be reduced, loss of soil would continue to occur.

—Moderate degradation of unfenced riparian areas would continue to occur.

—In the short term 84,994 acres of soil and vegetation would be disturbed by land treatments.

—In the short term 295 acres of vegetation and soil would be disturbed by range improvements.

—New projects would result in a corresponding increase in annual maintenance costs.

—Numerous water developments and land treatments could create a serious imbalance in summer and winter wildlife ranges. Summer range would increase while winter range would decrease.

—Degradation of cultural resources would continue to occur

—Interior pasture fences and allotment boundary fences may restrict recreational uses, antelope mobility, and big game distribution.

Emphasize Watershed, Wildlife Habitat, and Soil Stability

—The opportunity for increased livestock production would be lost.

— In the short term 242 acres of vegetation and soil would be disturbed by range improvements.

—In the short term 38,843 acres of vegetation and soil would be disturbed by land treatments.

—Degradation of cultural resources would continue, but impacts would be less than the proposed action.

—Fences may restrict recreation uses, antelope mobility, and big game distribution.

—Wild horse populations would be reduced.

—New projects would result in a corresponding increase in annual maintenance costs.

License No Livestock Use on Public Lands

—An immediate loss of 197,971 AUMs and an estimated $1,973,800 in annual ranch income would occur.

—Regional income would be reduced by approximately $6,854,800.

SHORT-TERM USES VS. LONG-TERM PRODUCTIVITY

In the short term livestock numbers and management would remain the same until monitoring or inventory results indicate a change would be appropriate. Shortterm disturbances by range improvements and land treatments should result in long-term benefits through increased forage.

Adverse consequences associated with fences would be immediately apparent, yet the benefits from these projects would slowly develop over the long term.

Any improvement in soil or watershed would occur in the long term.

In most alternatives, wildlife numbers would change as specified in the short term and stabilize in the long term.

Long-term forage productivity is expected to increase overall in all alternatives except the Continuation of the Existing Situation Alternative.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

This section identifies the extent to which the proposed action and alternatives would permanently alter the existing situation with respect to resources and management.

—All negative impacts on cultural resources would result in irretrievable losses of information.

—For each year under the License No Livestock Use on Public Land Alternative, $6,854,800 would be lost from total regional income. These losses would be irretrievable.

—In areas where range improvements and land treatments are implemented, short-term soil and vegetation losses would be irretrievable until the sites are fully reclaimed with vegetation.

CUMULATIVE IMPACT ANALYSIS AND IMPACT SUMMARY

Mineral development, especially that related to energy, is the major contributor to surface disturbance in the Salt Wells-Pilot Butte area. The BLM projections in Table 2-31 are based on anticipated developments, with provisions for reclamation efforts as indicated in lease stipulations and mitigation measures for the respective developments. The projections are based on current leases, anticipated markets, and company expressions of interest.

In addition, the Bureau is considering coal preference right lease applications and potential competitive coal leasing in the area that could further impact grazing (BLM 1982d, 1981c and tract profiles available for review in the Rock Springs District Office). Disturbance, if these potential areas were leased, could result in additional losses to grazing forage of approximately 1,590 acres (159 AUMs) in the short term (five years) and more than 6,050 acres (605 AUMs) within the long term (thirty years) as defined by the grazing management program. Most of this disturbance would occur in the Rock Springs Allotment.

Generally the projected losses to mineral development are not considered significant; however, cumulative impacts to individual operators could be significant. The grazing management program as proposed could offset the livestock grazing and wildlife habitat losses to mineral development in most cases, although its effectiveness would be lessened. Reclamation of the areas disturbed by mineral development to a level equal to or better than the previous use—generally as range for livestock and wildlife—is expected, although the reclamation success rate has been rated as low in much of the area.

The Emphasize Livestock Production Alternative would have a more positive impact on the livestock industry than the proposed action, while the Emphasize Watershed, Wildlife Habitat, and Soil Stability and the License No Livestock Use on Public Lands offer greater benefits to wildlife and to recreation. The proposed action offers a more balanced program for multiple-use management, as shown in Table 1-19.

Table 2-31

CUMULATIVE ACRES DISTURBED BY ACTIVITIES OTHER THAN GRAZING IN SALT WELLS-PILOT BUTTE AREA

Type of Developmeot	Baseline 1980	1985			1990		
		Disturbed	Reclaimed	Residual	Disturbed	Reclaimed	Residual
Cosl Mines snd Facilities 1/	2,866	8,500	2,624	5,876	9,118	2,283	6,835
Trona Mines/Sods Ash Plants snd Facilities 2/	1,650	0	0	1,650	0	0	1,650
Oil snd Gas Wells snd Exploration 3/	4,195	8,635	5,796	2,839	5,583	3,537	2,052
Oil snd Gss Plants snd Major Pipelines 3/	906	2,365	1,792	573	573	0	573
Other Major Industries 4/	580	580	0	580	1,801	482	1,319
AUMs Out of Forage Base	1,020			1,152			1,243

Type of Development	Residual 1990	1995			2000		
		Disturbed	Reclaimed	Residual	Disturbed	Reclaimed	Residual
Cosl Mines snd Facilities	6,835	9,773	3,366	6,407	9,032	3,514	5,518
Trons Mines/Sods Ash Plants snd Facilities	1,650	1,785	0	1,785	2,585	0	2,585
Oil aod Gss Wells snd Exploration	2,052	3,152	2,118	1,034	2,144	1,200	944
Oil snd Gss Plants snd Major Pipelines	573	573	254	319	3/	3/	319
Other Major Industries	1,319	1,319	0	1,319	1,319	0	1,319
AUMs Out of Forage Baae	1,243			1,086			1,068

1/ Based on BLM projections (Jsnusry 1983) for developmeot without further leasing except for maintenance tracts.

2/ Based on BLM projections in sodium environmental asseaament (BLM 1982a).

3/ Based on BLM projections, Big Sandy/Salt Wells oil and gas environmental asseasmeot (BLM 1982b), aod various pipeline environmental sasessments. Projections on pipelines remain same after 1990; data insufficient to project beyood that poiot.

4/ Based on BLM projections and Chevron phoaphate project EIS (BLM and State of Wyoming 1983).

5/ Calculated on area average of 10 acres per AUM.

CHAPTER 3

CONSULTATION AND COORDINATION

TEAM ORGANIZATION

This environmental impact statement (EIS) was prepared by an interdisciplinary team of resource specialists in the Rock Springs District Office and the Salt Wells and Big Sandy resource area offices. The Team Leader and Core Team were primarily responsible for revising and organizing the EIS, in addition to other assigned sections. Table 3-1 lists the preparers of this EIS.

COORDINATION IN PREPARATION OF THE PROPOSED ACTION AND ALTERNATIVES

Draft range management recommendations for the area were developed in 1980 and 1981 through the BLM planning process by the Big Sandy and Salt Wells resource area staffs. The public was consulted throughout the process.

In July 1981, letters were sent to various agencies, organizations, and individuals, announcing the Bureau's new rangeland management policy; the policy includes a requirement that grazing allotments be grouped into management categories. During July and August 1981, the BLM discussed the classification system and management categories with various groups; included were the Western Wyoming Livestock Users Association and the Rock Springs Grazing Association boards of directors, the BLM Grazing Advisory Board, and the BLM Multiple Use Advisory Council. BLM Salt Wells range staff members also met with most of the area's livestock operators on a personal basis to solicit their comments on the system. Final categorization criteria were sent to the public in January 1982, and the operators were sent a letter in July 1982 that explained the proposed action and alternatives.

The proposed land use decisions for range management were presented during the public scoping meeting July 29, 1982. The scoping meeting was announced in a news release to media in the Rock Springs District. In September 1982, another letter was sent to the public to remind interested agencies, organizations, and individuals of the EIS and to outline the proposed action and alternatives. Subsequent meetings were held in November and December 1982 with the Western Wyoming Livestock Users Association, Inc.; Old West Regional Commission; and Wyoming Game and Fish Department to discuss various aspects of the proposed action.

PUBLIC CONSULTATION AND COORDINATION

In addition to the public scoping meetings (see Chapter 1 for details), the Bureau has consulted with various individuals and agencies with expertise on specific aspects of this EIS. Rock Springs banking interests (Northside State Bank, Rock Springs National Bank, and First Wyoming Bank of Rock Springs) were consulted concerning the Bureau's economic profiles for typical livestock operations. Also consulted concerning the Bureau's economic profiles were the Federal Land Bank, Production Credit Association; Economic Research Service, U.S. Department of Agriculture; economics and animal science departments, Colordado State University and the University of Wyoming; Sweetwater County Extension Agent; and Sweetwater County Tax Assessor. The Wyoming Game and Fish Department was consulted concerning big game populations in the area. Seedskadee Wildlife Refuge and Flaming Gorge National Recreation Area staff members are being consulted concerning range management actions within those areas.

Table 3-1

LIST OF PREPARERS

Name	EIS Assignment	Position/Expertise	College Education	Experience
Jim Cagney	Team Leader; Forestry, Livestock Grazing	Salt Wells Resource Area Range Conservationist	B.S. Range and Forest Management, Colorado State University	BLM- 5 yrs.
Mick Finn	Core Team; Technical Coordinator; Livestock Grazing	Salt Wells Resource Area Range Conservationist	B.S. Range Management, University of Wyoming	BLM- 4 yrs.; Wyoming Game and Fish Department- 9 mos.
Ronald C. Hardt	Core Team; Land Use Constraints	Rock Springs District Technical Writer-Editor	B.A. Secondary Education, University of Northern Colorado	BLM- 5 1/2 yrs; University of Colorado- 6 yrs.
Bonnie Wright	Lead Word Processing	Rock Springs District AMText 425 Operator/Mag Car II Typist	2 years Western Wyoming College	BLM- 2 1/2 yrs.
Pamela James	Word Processing	Rock Springs District AMText 425 Operator		Private industry- 4 yrs.
Phyllis Roseberry	State Environmental Coordination	Wyoming State Office Natural Resource Specialist	B.A. Botany, University of California, Santa Barbara; M.S. Agricultural Development, University of California, Davis	BLM- 10 yrs.; Shell Chemical- 9 mos.; Federal Energy Regulatory Commission- 3 yrs.
Ann E. Aldrich	Vegetation	Rock Springs District Botanist	B.S. Botany, University of Michigan	BLM- 3 1/2 yrs.
Larry Apple	Terrestrial Wildlife	Salt Wells Resource Area Wildlife Biologist	B.S. Fisheries and Wildlife Biology, Iowa State University	BLM- 3 1/2 yrs; Iowa Department of Environmental Quality- 3 yrs.
Bruce W. Baker	Special Assistance: Terrestrial Wildlife	Rock Springs District Wildlife Management Biologist	B.S. Biology, California State University, Northridge; M.S. Wildlife Management, Humboldt State University; PhD Wildlife Ecology, Texas A&M	BLM- 3 1/2 yrs.
Renee Dana	Environmental and EIS Procedural Coordination	Rock Springs District Environmental Coordinator	B.S. Range Management, University of Wyoming	BLM- 8 yrs.
Linda S. Deusll	Special Assistance: Writer-Editor	Rock Springs District Writer-Editor		BLM- 6 1/2 yrs.
Mary J. Hanson	Air Quality, Climate, Topography, Cultural Resources, Visual Resources	Salt Wells Resource Area Outdoor Recreation Planner	B.S. Parks and Recreation Management, University of Wyoming	BLM- 3 yrs.; Forest Service- 2 1/2 yrs.
Tim Murphy	Special Assistance: Range	Salt Wells Resource Area Range Conservationist	B.S. Range Management, University of Wyoming	BLM- 1 1/2 yrs; Forest Service- 1 yr.
Jim Perkins	Livestock Grazing, Wild Horses	Salt Wells Resource Area Range Conservationist	B.S. Range Management, New Mexico State University	BLM- 8 yrs.; Agricultural Research Service 3 yrs.
Roland L. Robbins	Livestock Grazing, Wild Horses	Big Sandy Resource Area Range Conservationist	B.S. Watershed Management, Utah State University	BLM- 13 yrs.
Bruce H. Smith	Water Resources and Aquatic Habitat	Rock Springs District Fisheries Biologist	B.S. Fish and Wildlife Management, University of Wyoming	BLM- 8 1/2 yrs. Peace Corps- 2 yr.
Dean Stilwell	Mineral Resources	Salt Wells Resource Area Geologist	B.S. and M.S. Geology, University of Nebraska	BLM- 2 1/2 yrs.; private industry- 1 yr.; University of Nebraska- 2 1/2 yrs.; Nebraska Geological Survey- 1 yr.
Colin W. Voigt	Soils	Rock Springs District Soil Scientist	B.S. Agronomy, University of Kentucky	BLM- 4 yrs.
John S. Young	Socioeconomic Conditions	Rock Springs District Regional Economist	B.S. Animal Science and M.S. Agricultural Systems, Colorado State University	BLM- 2 yrs.; CSU- 1 1/2 yrs.

LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE STATEMENT ARE SENT

Federal Agencies

Bureau of Reclamation
Department of Agriculture
  Economic Research Service
Department of Commerce
  Deputy Assistant Secretary for Environmental Affairs
Department of Defense
  Army Corps of Engineers
  Office of Naval Petroleum and Oil Shale Reserves
Department of Energy
Department of the Interior
  Office of Environmental Project Review
  Natural Resources Library
Department of Transportation
  Water Resources Coordinator
Department of Housing and Urban Development
  Regional Environmental Officer
Environmental Protection Agency
  Director, Office of Federal Activities
  Regional Office
Fish and Wildlife Service
Forest Service
National Advisory Council on Historic Preservation
National Park Service
Soil Conservation Service
U.S. Senators Malcolm Wallop and Alan Simpson
U.S. Congressman Dick Cheney

State Agencies

Governor's Office
  State Planning Coordinator's Office (State Clearinghouse for Appropriate State Agencies); also, by request to:
  Department of Agriculture
  Department of Environmental Quality-Land Quality Division
  Wyoming Game and Fish Department
  Wyoming Land Use Administration

Local Government

Lincoln-Uinta Association of Governments

Local Government

Lincoln-Uinta Association of Governments
Mayor of Green River
Mayor of Rock Springs
Mayor of Superior
Sweetwater County Association of Governments
Sweetwater County Commissioners
Uinta County Commissioners

Educational Organizations

Colorado State University
Northwestern University
  Center for Urban Affairs and Policy Research
University of Wyoming
  Division of Range Management
  Economics Department
Western Wyoming College

Livestock Operators

All livestock operators who utilize Bureau grazing permits within the Salt Wells-Pilot Butte area. See Appendix B, Scoping Contacts, for a listing.

Other Interested Organizations and Individuals

BLM Rock Springs District Grazing Advisory Board Members
Champlin Petroleum
Defenders of Wildlife
Craig D. Hawks
International Society for the Protection of Mustangs and Burros
Finis Mitchell
Kent Morrison
National Wild Horse Association
National Wildlife Federation
Natural Resources Defense Council
Old West Regional Commission
RPF Ecological Consultants
Calvin Ragsdale
Rocky Mountain Energy
Seedskadee Audubon Society
Sierra Club
Society for Range Management
Sweetwater County Historical Society
Sweetwater County Wildlife Association
Union Pacific Railroad
Upland Industries
Wild Horse Organized Assistance
Wildlife Management Institute
Wyoming Farm Bureau Federation
Wyoming Natural Heritage Program
Wyoming Outdoor Council
Wyoming Stock Growers Association
Wyoming Wildlife Federation
Wyoming Wool Growers Association

REVIEW OF THE DRAFT

A limited number of copies of the draft EIS are available upon request at the BLM Rock Springs District Office. Copies are also available for review in the public libraries at Evanston, Farson, Green River, and Rock Springs and in the libraries at the University of Wyoming (Laramie) and Western Wyoming College (Rock Springs).

A news release announcing the availability of the draft EIS and the public comment period was distributed to media in the District and surrounding region when the draft became available.

APPENDIX A

COMMON AND SCIENTIFIC NAMES OF MAJOR ANIMALS AND PLANTS IN SALT WELLS-PILOT BUTTE AREA

ANIMALS

Mammals

Black-footed ferret	*Mustella nigripes*
Bobcat	*Lynx rufus*
Coyote	*Canis latrans*
Elk	*Cervus canadensis*
Moose	*Alces alces*
Mule deer	*Odocoileus hemionus*
Pronghorn antelope	*Antilocapra americana*

Birds

Bald eagle	*Haliaeetus leucocephalus*
Blue grouse	*Dendragapus obscurus*
Canada geese	*Branta canadenses*
Chukar partridge	*Alectoris chukar*
Ducks	*Anas spp.*
Ferruginous hawk	*Buteo regalis*
Golden eagle	*Aquila chrysaetos*
Goshawk	*Accipiten gentilis*
Great horned owl	*Bubo virginianus*
Marsh hawk	*Circus cyaneus*
Mourning dove	*Zenaidura macroura*
Peregrine falcon	*Falco peregrinus*
Prairie falcon	*Falco mexicanus*
Red-tailed hawk	*Buteo jamaicensis*
Rough-legged hawk	*Buteo lagopus*
Sage grouse	*Centrocercus urophasianus*

APPENDIX A

PLANTS

Trees

Aspen	*Populus tremuloides*
Cottonwood	*Populus spp.*
Douglas fir	*Pseudotsuga menziesii*
Engelmann spruce	*Picea engelmannii*
Juniper (cedar)	*Juniperus osteosperma*
Limber pine	*Pinus flexilis*
Lodgepole pine	*Pinus contorta*
Subalpine fir	*Abies lasiocarpa*

Shrubs

Big sagebrush	*Artemisia tridentata*
Bitterbrush	*Purshia tridentata*
Birdsfoot sagebrush	*Artemisia pedatifida*
Black sagebrush	*Artemisia nova*
Broom snakeweed	*Gutierrezia sarothrae*
Bud sagebrush	*Artemisia spinescens*
Ceanothus	*Ceanothus spp.*
Chokecherry	*Prunus virginiana*
Fringed-sagewort	*Artemisia frigida*
Greasewood	*Sarcobatus vermiculatus*
Low sagebrush	*Artemisia arbuscula*
Horsebrush	*Tetradymia canescens*
Mountain mahogany	*Cercocarpus montanus*
Rabbitbrush	*Chrysothamnus spp.*
Saltbush (Nuttalls)	*Atriplex nuttallii*
Serviceberry	*Amelanchier alnifolia*
Shadscale	*Atriplex confertifolia*
Spiny hopsage	*Grayia spinosa*
Snowberry	*Symphoricarpos spp.*
Willow	*Salix spp.*
Winterfat	*Eurotia lanata*

Grasses and Grasslike Plants

Bluegrass	*Poa spp.*
Big bluegrass	*Poa ampla*
Bluebunch wheatgrass	*Agropyron spicatum*
Cheatgrass	*Bromus tectorum*
Columbia needlegrass	*Stipa columbiana*
Crested wheatgrass	*Agropyron cristatum*
Indian ricegrass	*Oryzopsis hymenoides*
Inland saltgrass	*Distichlis stricta*
Intermediate wheatgrass	*Agropyron intermedium*

King spikefescue	*Festuca kingii*
Needle-and-thread	*Stipa comata*
Nevada bluegrass	*Poa nevadensis*
Prairie junegrass	*Koeleria cristata*
Riparian wheatgrass	*Agropyron riparium*
Rush	*Juncus spp.*
Sandberg wheatgrass	*Poa sandbergii*
Sedge	*Carex spp.*
Squirreltail	*Sitanion hystrix*
Thickspike wheatgrass	*Agropyron dasystachyum*
Western needlegrass	*Stipa occidentalis*
Western wheatgrass	*Agropyron smithii*

Forbs

Arrowgrass	*Triglochin spp.*
Arrowleaf balsamroot	*Balsamorhiza sagittata*
Astragalus	*Astragalus spp.*
Black henbane	*Hyoseyamus niger*
Blue mustard	*Chorispora tenella*
Bull thistle	*Cirsium vulgare*
Cocklebur	*Xanthium strumarium*
Common comandra	*Comandra umbellata*
Common sunflower	*Helianthus annuus*
Crazyweed	*Oxytropis spp.*
Deathcamas	*Zygadenus paniculatus*
Erigonum	*Eriogonum spp.*
Fleabane	*Erigeron spp.*
Field pennycress	*Thlaspi arvense*
Goldenrod	*Solidago spp.*
Goldenweed	*Haplopappus spp.*
Goosefoot	*Chenopodium spp.*
Groundsel	*Senecio spp.*
Gumweed	*Grindelia spp.*
Halogeton	*Halogeton glomeratus*
Indian paintbrush	*Castilleja spp.*
Kochia (annual)	*Kochia scoparia*
Larkspur	*Delphinium spp.*
Locoweed (milkvetch)	*Astragalus spp.*
Lupine	*Lupinus spp.*
Penstemon	*Penstemon spp.*
Perennial pepperweed (whitetop)	*Lepidium latifolium*
Phlox	*Phlox spp.*
Pinnate tansymustard	*Descurainia pinnata*
Povertyweed	*Iva axillaris*
Pussytoes	*Antennaria spp.*
Russian thistle	*Salsola kali*
Russian knapweed	*Centaurea repens*
Scarlet globemallow	*Sphaeralcea coccinea*
Shepherds purse	*Capsella bursa-pastoris*
Showy milkweed	*Asclepias speciosa*
Sticky geranium	*Geranium viscosissimum*
Tansy mustard	*Descurainia spp.*
Western yarrow	*Achillea lanulosa*
Wild onion	*Allium spp.*
Wild lettuce	*Lactuca spp.*
Woody aster	*Machaeravthera glabriuscula*

APPENDIX B

SCOPING CONTACTS

Livestock Operators and Organizations

Clyde A. McKee
J. C. Anderson & Sons
Donald L. Behunin
Elmer J. Bonomo
Clinton D. Briggs
Isaac N. Brooks
Richard E. Taylor
Circle Bar Ranch
Diamond W. Ranch
Hans Raven
John Gardner
Alma Evans
Elza Eversole
George Robert Eyre
Gino Foianini
Earl Gamble
Robert Gamble
Graham Estate
Earl Hanks
Cook Sheep Company
Ronnie Harris
Cal Hickey Estate
Joe and Jack Hickey
Cedar Creek Ranch
Archie Lamb

Blair and Hay Land and Livestock Company
Big Sandy and Green River Livestock Company
Western Wyoming Livestock Users Assoc., Inc.
J. R. Broadbent
William H. Tripp
Lyman Grazing Assoc.
Andrew Maneotis
Currant Creek Ranch
James W. Ramsay
Myers Estate
Velma B. O'Neil
Victor Powers
Willow Creek Land
Redden Land and Livestock
Rife Ranch
Robert Lee Whitlock
Ruble Brothers
Claude Sadlier
Salt Wells Livestock
Robert L. Slagowski
Smith Rancho, Inc.
Lewis Stoll Estate
John Tinker
Glen T. Wadsworth
Roy Weber
Reed Wilbe
Wright Dickinson
Howard J. Brinton
Jewel F. Meeks
Don A. Vercimak
Birdie Jolley
Ira Austin
Rock Springs Grazing Assoc.
Burton and Ralph DeLambert
Robert and Gloria Lozier
John Hofeldt
Chilton Land and Livestock Company
William J. Thoman
Andrew Pal

APPENDIX B

Other Individuals and Groups

Calvin Ragsdale - Attorney

Tony Padilla - Representative for Congressman Richard Cheney

Soil Conservation Service - Rock Springs Office

James Medina - Representative for Senator Alan Simpson

Kate DuPont - Representative for Senator Malcolm Wallop

Wyoming Game and Fish Department

Dr. Fee Busby - University of Wyoming

Seedskadee Wildlife Refuge

Upland Industries

Ashley National Forest

John Borzea - Sweetwater Wildlife Association

Dick Randall - Defenders of Wildlife

Mayor Richard Waggener - Green River

Mayor Keith West - Rock Springs

Dick Loper - Old West EIS Project

Director, Wyoming Land Use Administration

Sweetwater County Commissioners

Uinta County Commissioners

APPENDIX C

SALT WELLS-PILOT BUTTE MONITORING PLAN

INTRODUCTION

This monitoring plan was prepared to assist the Big Sandy and Salt Wells resource areas range and wildlife staffs in conducting monitoring studies within the Salt Wells-Pilot Butte grazing management area. This plan will assist land managers and their staffs in determining how, when, and where monitoring studies are to be established and data collected. Where possible, specific locations for studies are indicated. Study sites, pending determination of location, will be documented as developed in individual Allotment Management Plans (AMPs), Habitat Management Plans (HMPs) and Wild Horse Herd Management Plans (WHMPs). This plan will be periodically updated to incorporate new study locations. The goal will be to make this plan comprehensive.

The management objectives discussed in this plan are taken from the Salt Wells Range Management Framework Plan-Step 2 (MFP-2); the Big Sandy Range MFP-2; and the Allotment Categorization Criteria for the Salt Wells-Pilot Butte area (written February April 1982). The monitoring objectives were developed to provide information on the progress toward, or achievement of, management objectives.

Allotment Categorization

Allotments in the Salt Wells-Pilot Butte area have been placed in three management categories, using the Allotment Categorization Criteria (see Chapter 1) to determine in which category each allotment was placed.

Management Objectives

Management Objectives for "I" Allotments

1. Correct grazing distribution problems through changes in grazing management.
2. Correct problems with season of use through changes in grazing management and/or season of use.
3. Reduce any excessive forage competition between grazing animals to satisfactory levels by adjusting stocking rates for livestock, wild horses, and wildlife at levels determined by monitoring activities.
4. Maintain or improve condition of the range sites within an allotment according to the desired production and composition of plant species needed to sustain existing or desired livestock, wild horse and wildlife numbers.

Management Objectives for "M" and "C" Allotments

1. Maintain the current key management species composition and vegetation production in each allotment.
2. Maintain the current balance of forage use between livestock and wildlife within the carrying capacity of each allotment.
3. Maintain the current livestock distribution on each allotment.
4. Maintain the current season of use on each allotment.

MONITORING OBJECTIVES

Monitoring Objectives for "I" Allotments

1. Determine range condition and trend five years after permanent trend studies on each allotment.

   a. Establish trend studies in 1984 on following allotments: Red Creek, Salt Wells, and Pine Mountain.

   b. Establish trend studies in 1985 on following allotments: Vermillion Creek, Spring Creek, Mellor Mountain, and Circle Springs.

   c. Establish trend studies in 1986 on following allotments: Sugarloaf, Henrys Fork, Sage Creek, and Hickey Mountain.

d. Establish trend studies in 1987 on following allotments: Horseshoe Wash, Antelope Wash, Crooked Wash, Hanks, Cottonwood Creek, Bald Hills, and Fourth of July.

2. Establish general utilization patterns and determine current utilization levels in each allotment before establishing permanent trend transects.
3. Determine key management species as needed in each allotment for livestock, wild horses, wildlife, and watershed.
4. Determine key management areas in each allotment.
5. Determine actual use by livestock, wild horses, and wildlife in each allotment. (This can be done concurrently or after grazing season and establishment of trend transects.)
6. Determine yearly variations in temperature and rainfall patterns.
7. Determine yearly phenodynamics of selected key management species.
8. Determine conflict areas in each allotment where competition between livestock and wild horses or wildlife occurs before establishing permanent trend transects.

Monitoring Objectives for "M" and "C" Allotments

1. Determine key area condition/trend in each allotment.
2. Determine key management species as needed in each allotment for livestock, wildlife, and watershed.
3. Determine actual grazing use levels for each kind of grazing animal annually.
4. Determine yearly variations in temperature and rainfall patterns.
5. Determine yearly phenodynamics of key management species.

MONITORING DATA NEEDS AND PROCEDURES

Actual Use

Actual use is the grazing use made of an area by livestock, wild horses, and/or wildlife without reference to permitted or recommended use.

Actual use records are important in allotment evaluation. They are a basic part of any subsequent evaluations directed toward revising existing management plans. Knowledge and interpretation of past use provide a basis for future management decisions. Actual use information, however, has no meaning unless used in conjunction with other information.

Wildlife

Intensive counts of antelope and elk in selected areas will be made as needed during the winter months, primarily by a Wyoming Game and Fish Department biologist and BLM area biologist to obtain site-specific data on habitat use. Deer distribution will be recorded without an emphasis on exact counts. Incidental count information of big game animals will be obtained throughout the year from Wyoming Game and Fish Department biologists, the BLM area biologist, other BLM District personnel, and area livestock operators.

The data will be recorded on Wyoming Game and Fish Department wildlife observation forms and entered into State of Wyoming automated data system. The data can be retrieved in many different ways, including by legal description, by animal species, etc.

Wild Horses

Range Staff Aerial Counts

Until wild horse numbers have been reduced to management levels identified in the wild horse herd management area plans, aerial census counts will be done over the entire Salt Wells-Pilot Butte area. These counts will be done in February of

each year. The census will be done by inventory area and according to a systematic flight path plan. One observer each from the Division of Operations and the Salt Wells Resource Area range staff will participate in the aerial count. Data will be recorded on a "Herd Management Identification Form".

When wild horse numbers have been reduced to management levels, aerial inventories will be restricted to wild horse herd management areas. The inventories will continue to be done annually in February. The counts will provide a reasonably accurate means of determining wild horse numbers and winter distribution by herd management area.

In addition, a summer aerial count will be conducted over at least a two-year time period to obtain information on wild horses, livestock, and wildlife distribution and on numbers within the wild horse herd management areas.

Ground Counts

Ground counts will be made on a monthly basis of the wild horses, livestock, and big game animals, specifically, within the wild horse herd management areas. The counts will be made by an area range conservationist and the area wildlife biologist. Participation of specialists from the BLM District Division of Operations and of Lands and Renewable Resources may be necessary at times. Data will be recorded on the BLM herd management identification form and the Wyoming Game and Fish Department wildlife identification form.

Livestock

Certified actual use reports will be required from livestock operators as a condition of permits or licenses. Approximate livestock numbers and livestock distribution will be obtained by the BLM resource area staff on an incidental basis and as concentrated efforts on selected allotments to assist in the identification of key areas and distribution problems. Concentrated efforts may involve the use of temporary employees and/or assistance of other BLM District employees.

Data will be recorded in field notebooks and on the Wyoming Game and Fish Department wildlife observation forms. The field notebooks will allow for rapid retrieval of data, possibly needed during a field season, while the WGFD data will be automated for a permanent record.

Utilization Information

Utilization refers to the percentage of the annual production of forage that has been removed by animals throughout a grazing period or grazing season.

The utilization of forage plants must be kept within maximum limits indicated as necessary in studies to allow these species to maintain or improve in health. Overuse of desirable plants, if continued over a period of time, will result in their disappearance or lowered contribution to total forage production. Utilization of grass, forb, and browse species will be collected by range and wildlife staff.

1. The following methods will be used to obtain utilization data.
   a. Ocular estimate by plot for key areas.
   b. Paired plot method for riparian areas.
   c. Key forage plant method for general utilization mapping of entire allotment.
   d. Cole method for browse studies in wildlife crucial areas.
   e. Riparian zone special studies:Currant Creek-Sage Creek studies are on file in the resource areas.
2. Allotments will be stratified to facilitate general utilization mapping. Stratification will be by:
   Range site.
   Range condition.
   Slope classes.
   Distance from water.

At least two areas within each stratum will be sampled by the key forage plot method. If too many classification units result, however, then some merging of strata may be necessary. The acreages of strata will be determined and units representing less than 10 percent of an allotment or pasture may not be sampled unless the unit represents a range site with high forage production or potential for high forage production.

The utilization data will assist the range staff, BLM and WGFD biologists, and livestock operators to select key areas for trend studies. The utilization data will help identify any distribution problems and provide some information on proper stocking rates when the utilization data are used with climate and actual use data.

The livestock operators, Wyoming Game and Fish Department personnel, and BLM District wildlife personnel will be encouraged to participate in the utilization sampling. Participation will be encouraged from the beginning (stratification) to the end of the process (data analysis, interpretation, and evaluation).

Utilization data will be gathered when livestock are moved from a pasture or allotment. It may also be necessary to obtain data from pastures or allotments ungrazed by authorized livestock, or more than once annually on pastures grazed by authorized livestock, to determine utilization by wild horses, wildlife, or unauthorized livestock.

Precipitation

Precipitation data consists of a record of the amounts of water received by season through snowfall and rainstorms.

Precipitation and forage production can have a close relationship. Precipitation data can be used, with some degree of success, to predict expected forage yields. Precipitation data interpreted in conjunction with other monitoring data will assist in the determination of carrying capacities for livestock, wild horses, and wildlife.

Precipitation data will be obtained by existing and to be established rain sites throughout the Salt Wells Resource Area. An effort wil be made to have livestock operators gather data to supplement BLM data.

There are thirteen existing rain gauge stations within the grazing management area. Five new gauges for the Salt Wells Resource Area will be of the remote recording type, and will probably be located at existing ranching headquarters.

1. The following procedures will be followed in collection of precipitation data.

   a. Continue to read existing ten rain gauges four times per year—4/15, 7/1, 9/1, and 10/15.

   b. Identify any "holes" in rain gauge coverage and establish needed stations. Any new station established will be done through consultation with livestock operators in the area.

   c. Rely on National Weather Service for temperature information, using data gathered at the following stations:

      (1) Rock Springs

      (2) Green River

      (3) Black Butte Coal Company

      (4) Sweetwater County Airport

   d. Establish remote weather stations as needed to gather rainfall and temperature information.

   e. Use data available on monthly summaries from Water Resource Research Institute (Laramie, Wyoming) through University of Wyoming.

   f. Compile other information, i.e., snowfall, frost-free days, soil moisture, etc., from U.S. weather stations.

Trend Information

The determination of trend is highly important. Generally, management changes are not needed if trend is upward, although improved management can accelerate the rate of change.

1. The following methods will be used to obtain trend data by allotment category.

   a. High Intensity Studies ("I" allotments have high priority)

      (1) Permanent plot transects—modified by Wyoming Committee, 30.72 x 45.00 inches plotframe.

      (2) Continue to photograph existing 3 x 3 feet permanent photoplots on one existing AMP every three years.

      (3) Data collected by range staff, refer to part E for scheduling by allotment by fiscal year.

   b. Low Intensity Studies (low priority "M" and "C" allotments)

      (1) Photograph existing 3 x 3 feet photoplots.

      (2) Ocular estimate of percentage plant species, by weight composition and range site condition.

         (a) Make ocular estimate of range condition and, if significant change is indicated, rerun 3 x 3 feet/nonpermanent 20 plot.

         (b) Use 1981 baseline date as starting point.

         (c) Repeat every 5 years. Refer to Schedules and Manpower Requirements section, fiscal years 86-87.

Phenology

Phenology is the study of periodic biological phenomena such as flowering, seeding, etc., especially as related to climate.

APPENDIX C

Phenology data of key plant species will be recorded in field notebooks during allotment visits. These data will be obtained incidental to other activities.

The phenology data will be used with other data to help explain change or lack of change in rangeland condition.

Wildlife Conflict Areas

Determination of trend in wildlife critical areas will aid in resolving conflicts with other resources. To obtain trend in critical areas the following steps will be followed:

1. Determine habitat type by distribution surveys.
   a. Collected by BLM Area Biologist and Wyoming Game and Fish Department.
      (1) Tentative schedule December April of each year.
      (2) Form for distribution (tentative).
   b. Consideration given to vegetation types, slope, exposure, etc. Priority given to "I" allotments.
2. Determine key use areas and key species within.
   a. Determination made by BLM Area Biologist and Wyoming Game and Fish Department.
   b. Consideration of animal distribution, vegetation, composition, etc.
3. Monitor trend of key species.
   a. Use modified Cole method.
   b. Use line intercept method.

Riparian Area Exclosure

The Currant Creek exclosure will aid with the establishment of permanent photo points. The trend of the area will show differences in unrestrictive grazing and restrictive grazing, along major riparian zones. This information will broaden the data base and should provide for more sound management decisions. The photo points will be installed in the exclosure of the Slate Creek Allotment in fiscal year 83. This data will be collected by the range staff.

Other Exclosure Studies

There are several established exclosures in two allotments:Red Creek and Henrys Fork. These exclosures are not in riparian areas. Their locations are on dry upland sites. When time allows, studies will be established to obtain a broader base in establishing trend for upland sites. Modified permanent plot transects will be run inside and outside of the sites. Photo points will be established.

1. Red Creek Exclosure
   a. Establish photo plots.
   b. Run modified permanent plot transects outside and inside.
2. Henrys Fork Exclosure
   a. Establish photo plots.
   b. Run modified permanent plot transects outside and inside.

Determination of Key Areas

1. Responsibility—Key areas will be determined jointly by BLM Resource Area range and wildlife staff, the Wyoming Game and Fish Departments and the livestock permittees.
2. Tentative schedule for consultations.
   a. Refer to Schedules and Manpower Requirements section, starting with priority "I" allotments. Conduct allotment categorization for livestock, range staff—7WM per fiscal year.
3. Criteria for Determination
   a. Utilization patterns
   b. Vegetation types
   c. Range sites
   d. Water location and distance
   e. Fence locations
   f. Slope and exposure
   g. Special or crucial areas
   h. Wildlife crucial ranges
   i. Wild horse ranges

Consultations

This section of the monitoring plan is devoted solely to outside interests; that is, consultation with permittees, Wyoming Game and Fish Departments, and other special interest groups. The Salt Wells staff will conduct the consultations. This phase will be conducted according to dates listed under Schedules and Manpower Requirements section. The consultation will cover all phases of rangeland monitoring listed in this plan.

The following outlines how the consultation phase will work:

a. Letter of agreement with ranchers on key areas, key species, range studies etc. Cooperative agreements on private or state land.

b. Letter of agreement on key areas with Wyoming Game and Fish.

c. Winter office consultation Map work/compilation of existing data.

d. On the ground spring and summer for actual study establishment.

e. End of year review, evaluation.

SCHEDULES AND MANPOWER REQUIREMENTS

Permanent Staff

1. Two range conservationists: One will be project coordinator; the other, a crew leader.

   Schedule—From June 1 to August 31 each year; 3 work-months (WMs) x 2 = 6 WMs total per trend studies. From September 1 to November 30; 3 WMs x 2 = 6 WMs for utilization studies.

2. Wildlife biologist—3 WM.

Temporary Personnel

1. Range technicians assigned to Salt Wells Resource Area as to work load requirement.
   a. Calendar year 84—2 Range Techs
   b. Calendar year 85—4 Range Techs
   c. Calendar year 86—6 Range Techs
   d. Calendar year 87—6 Range Techs
2. Schedule—From May 1 toOctober 30; 6 WM for each tech.

Establishment and Reading of Trend and Utilization Studies

1. Permanent project leader will determine transect direction on field map andestablish witness post.
2. There will be a two-week training and orientation period for each temporary employee to familarize the technician with the area and study procedures.
3. Crew leader and crew members will establish and read all plots. This will be done for each transect in a key area.
4. Utilization studies will be conducted in key and other selected areas by permanent Salt Wells range staff and temporary technicians.

Estimated Workload for Fiscal Year 1983

1. Starting January 1, begin formal consultations with operators in Red Creek, Pine Mountain, and Salt Wells allotments.
2. Starting May 1, determine livestock distribution on the three allotments.
3. Determine key areas and stratify the allotments.
4. Starting September 15, preliminary studies on livestock distribution in Vermillion Creek, Spring Creek, Mellor Mountain, and Circle Springs allotments.

Estimated Workload for Fiscal Year 1984

1. Starting October 1, begin formal consultations with operators in Vermillion Creek, Spring Creek, Mellor Mountain, and Circle Springs allotments.
2. Starting June 1, establish trend transects in key areas in Red Creek, Salt Wells, and Pine Mountain allotments.
3. Determine livestock distribution in allotments listed in Item 1, 1984.
4. Determine key areas and stratify the allotments listed in Item 1, 1984.
5. Starting September 1 to October 30, read utilization studies on trend plotsin Red Creek, Salt Wells, and Pine Mountain allotments.

APPENDIX C

Estimated Workload for Fiscal Year 1985

1. From October 1 to January 1, conduct preliminary studies on livestock distribution in Sugarloaf, Henrys Fork, Sage Creek, and Hickey Mountain allotments.
2. On January 2, start formal consultations with operators in the above allotments.
3. On June 1, establish trend plots in key areas in Vermillion Creek, Spring Creek, Mellor Mountain, and Circle Springs allotments.
4. Determine livestock distribution in allotments listed in Item 1, 1985.
5. Determine key areas and stratify allotments listed in Item 1, 1985.
6. Starting September 1 to October 30, read utilization studies in allotments listed in Item 2, 1984, and Item 3, 1985.

Estimated Workload for Fiscal Year 1986

1. October 1 to January 1, preliminary studies on livestock distribution on Horseshoe Wash, Antelope Wash, Crooked Wash, Hanks, Cottonwood Creek, Bald Hills, and Fourth of July allotments.
2. January 2, start formal consultations with operators in the above allotments.
3. Starting June 1, establish trend studies in Sugarloaf, Henrys Fork, Sage Creek, and Hickey Mountain.
4. Determine livestock distribution in allotments listed in Item 1, 1986.
5. Determine key areas and stratify allotments listed in Item 1, 1986.
6. September 1 to October 30, read utilization studies for allotments under Item 2, 1984; Item 3, 1985; and Item 3, 1986.
7. Starting June 1, read trend studies already established on the "M" category allotments: Rock Springs, Rife, Alkali Creek, Larson, and Stag Hollow.

Estimated Workload for Fiscal Year 1987

1. Starting October 1, analyze data, review and consult with operators.
2. June 1, establish trend studies in Horseshoe Wash, Antelope Wash, Crooked Wash, Hanks, Cottonwood Creek, Bald Hills, and Fourth of July allotments.
3. Evaluate studies in "C" category allotments established in fiscal year 1985.
4. September 1 to October 30, read utilization studies in allotments listed under 5b, 6c, 7c, and 8b.

Summary

1. Utilization studies will put extra workload on permanent staff. Range technicians hired for transect establishment will be needed to run utilization studies.
2. If budget needs are made there should be little problem in completing the establishment of monitoring studies by Fiscal Year 1987. Additional help will be needed each year for utilization reading, and this should be short-term employment.

Reading of Climate Studies

1. Ten days per year are currently required to read existing rain gauges.
2. Establish five more automatic rain gauges in resource area to supplement existing gauges, time required 48 days per year.
3. One permanent Range Conservationist or Technician, 3 WMs per year to gather rain gauge data.

APPENDIX C

Reading of Range Readiness and Plant Phenology Studies

1. One permanent range conservationist will be assigned.
2. Estimated workload—1 WM
3. Schedule—Primarily these studies will be conducted from April 1 to July 15 of each year.

COORDINATION AND CONSULTATION

Responsibility—Supervisory Range Conservationist; schedule to be developed for January through March, Fiscal Year 1983.

1. Ranchers in first priority allotments.
2. Wild horse groups.
3. Wyoming Game and Fish Department.
4. Soil Conservation Service.

DATA STORAGE AND RETRIEVAL

Responsibility—Supervisory Range Conservationist.

1. Six-way allotment files—data stored by section.
2. Photograph files—filed chronologically in three-ring black binder.
3. Call up data on retrieval system with BLM Wyoming State Office computer.

ANALYSIS, INTERPRETATION, AND EVALUATION

Guidelines to be provided by BLM Denver Service Center through development of the BLM 4450 Manual.

APPENDIX D

RATIONALE AND METHODOLOGY USED IN THE DEVELOPMENT OF AUM ESTIMATES

METHODOLOGY FOR COMPUTING RANGE CONDITION

Data Base

Soil and Land Use Technology, Inc. (SaLUT), in cooperation with the Soil Conservation Service (SCS), and under contract to the Bureau of Land Management (BLM), conducted third-order, semi-detailed soil surveys of central and southern Sweetwater County and adjacent areas during the 1978, 1979, and 1980 field seasons. The results of those surveys were published in three inventories: Salt Wells (June 1979), Green River (December 1981), and Overland (December 1981); those reports are available for review in the Rock Springs District Office.

The Salt Wells and Green River area reports contain the soils information used in this EIS. The Salt Wells survey covers the central and western portions of southern Sweetwater County and the southeastern corner of Uinta County, while the Green River survey covers the remainder of central Sweetwater County. The soil inventories were carried out as a part of the National Cooperative Soil Survey under the review and correlation procedures of the SCS.

Soil map units were identified, described, and displayed on aerial photographs. Table D-1 is a sample of eleven of the 93 map units described in the Salt Wells area inventory. Each map unit's components (soil series) are correlated to range sites, and given an average percentage composition, within the map unit.

Reference Material

The SCS Technical Guide (revised 1977) provides descriptions of Wyoming range sites. Range sites are kinds of rangeland which differ from other rangeland through their ability to produce a distinct amount and composition of vegetation. Figure D-1 is an example of a range site description from the SCS guide. The particular site shown is a loamy range site in the 10 to 14 inch precipitation zone. Please note that Part A-3 of the example is a description of the climax community for that site.

Assumptions and Rationale

Range "condition" describes current productivity of a range relative to what the range is usually capable of producing. There are four ecological condition classes: (1) excellent; (2) good; (3) fair; and (4) poor. The following shows the relationship between the ecological condition classes and the climax communities:

Range Condition Class	Percentage of Climax Plant In the Existing Plant Community[1]
Excellent	76-100
Good	51-75
Fair	26-50
Poor	0-25

[1]As shown in SCS range site guides.

Condition measurements taken at different points in time provide information regarding trend.

The present ecological range condition rating alone does not indicate whether the plant community on a given range site is improving or deteriorating in relation to its potential. Condition measurements taken at different points in time, through monitoring, provide information regarding apparent trend. The terms "excellent", "good", "fair", and "poor" are the traditional way of describing the status of the plant community; and do not necessarily represent a value judgment concerning current status. In many cases good or even fair condition may be the management objective.

Figure D-1

Sample Range Site Description

Technical Guide
Section 11 E
Major Land Resource Area (34)(46)(47)

LOAMY (Ly)
10-14" Foothills & Basins West of Continental Divide
Correlated Range Site No._____

RANGE SITE DESCRIPTION

A. PHYSICAL CHARACTERISTICS

1. Physiographic Features

This site will usually occur in an upland position on relatively flat to moderately sloping land on all exposures. The elevation ranges from 6,200 to 8,000 feet, with most of the area above 7,000 feet.

2. Climatic Features

See attached climate description

3. Native (climax) Vegetation

a. The climax plant community is characterized by a variety of plants which prefer a medium-textured soil with moderate permeability. Potential vegetation is about 75% grasses and grass-like plants, 10% forbs and 15% woody plants.

b. Plant species and percentages found in the climax plant community by air-dry weight are:

SPECIES	PERCENT
Grasses and Grass-like Plants	
Rhizomatous wheatgrass Thickspike wheatgrass Streambank wheatgrass Western wheatgrass	10-20
Bluebunch wheatgrass	5-10
Canby bluegrass	5-10
Needleandthread	5-10
Letterman needlegrass	5-10
All following Grasses and Grass-like Plants Mutton bluegrass Needlelaaf sedge Plains reedgrass Prairie junegrass Sandberg bluegrass Spika fescue	10-20*

Threadleaf sedge Bottlebrush squirreltail Indian ricegrass	
Forbs	
All following Forbs Agoseris American licorice Asters Biscuitroot Buttercup Cerastium Clovers Common commandra Common tansy Eriogonums Fleabane Fringed sagewort Goldenweed Gromwell Groundsel Hawksbeard Larkspur Lupine Milkvetch Nailwort Paintbrush Penstemons Phacalia Phlox Pointvetch Pussytoes Sagebrush gilia Scarlet globemallow Violet Western yarrow	5-15*
Woody Plants	
Big sagebrush	5-10
All following Woody Plants Birdsfoot sagewort Bud sagewort Cactus	5-10*

Low rabbitbrush
Serviceberry
Shadscale
Spineless horsebrush
Spiny horsebrush
Spiny hopsage
Winterfat

*Of plants in these groups, no more than 5% of any species is allowable in the potential plant community.

c. Percent ground cover ranges from 40-50 percent.

d. Species that are not a part of the climax plant community, but are most likely to invade this site if condition declines, are cheatgrass and annual weeds. Rabbitbrush, yarrow, and big sagebrush become more dominant as range condition deteriorates.

4. Total Annual Production (Pounds per Acre Air-dry Weight)

Favorable years - 1,500 pounds
Median years - 1,200 pounds
Unfavorable years - 700 pounds

5. Soils

a. The soils of this site are light colored and exceed 15 inches in depth. Textures range from very fine sandy loams through clay loams. Permeability is moderate to moderately slow.

b. Soil taxonomic units which characterize this site are:

Almy, Evanston, Rickman, Patent

c. Complete soil descriptions are available in the soil survey descriptive legend.

B. MAJOR USES AND INTERPRETATIONS FOR:

1. Grazing

This site is predominantly grasses with a small amount of forbs and woody plants. It is valuable for use by all forms of domestic livestock for spring, summer, fall and some winter grazing.

2. Wood Products

None

3. Wildlife

See attached description

4. Watershed (Hydrologic Interpretations)

This range site has a potential for low runoff. The soil cover complex numbers are:

Excellent	55
Good - high fair	65
Fair	80

(See Section 4, SCS National Engineering Handbook for runoff quantities and hydrologic curves.)

5. Recreation and Natural Beauty

This site has a fairly large number of forbs which have flowers that bloom throughout spring and early summer. It is a fair to good area for hunting deer, antelope and small upland game animals.

6. Threatened or Endangered Plants and Animals

Prairie falcon

7. Location of Typical Examples of this Site (To be determined at the local field office level.)

8. Other Pertinent Information

GUIDE TO SUGGESTED INITIAL STOCKING RATE

Condition Class	Percent Climax Vegetation	AUM's/Acre	Acres/AUM
Excellent	76 - 100	.40	2.5
Good	51 - 75	.33	3.0
Fair	26-50	.20	5.0
Poor	0-25	.10	10.0

Table D-1

REPRESENTATIVE MAPPING UNITS AND ASSIGNED RANGE SITES

Mapping Unit No.	Map Unit (With Components and Their Proportions)	Range Site
553	Peltonia Variant-Grieves complex, 3 to 10 percent slopes	
	Feltonia Variant very fine sandy loam, 3 to 10 perceot slopes (50%)	Loamy 10-14" PZ[1/]
	Grieves aandy loam, 3 to 10 percent slopes (40%)	Sandy 10-14" PZ
555	Luhon loam, 4 to 8 percent slopes	Loamy 10-14" PZ
563	Blazon-Shinbara-Rentsac complex, 30 to 60 percent slopes	
	Blazon loam 30 to 60 percent alopes (30%)	Shallow loamy 10-14" PZ
	Shinbara loam, 30 to 60 percent slopes (30%)	Very shallow 10-14" PZ
	Rentaac channery loam, thin solum, 30 to 60 percent alopes (20%)	Very shallow 10-14" PZ
575	Elk Mountain-Ryan Park complex, 2 to 15 percent slopes	
	Elk Mountain loam, 2 to 15 percent slopes (50%)	Loamy 10-14" PZ
	Ryan Park sandy loam, 2 to 15 percent slopes (25%)	Sandy 10-14" PZ
576	Spool-Quealy Varisnt-Lamarsh complex, 3 to 15 percent slopes	
	Spool loamy sand, 3 to 15 percent slopes (30%)	
	Quealy Variant fine sandy loam, 3 to 15 percent slopes (30%)	Shallow-breaks 10-14" PZ
	Lamarsh fine sand, 3 to 15 percent slopes (20%)	
579	Blackhall-Elk Mountain complex, 0 to 15 percent slopes	
	Blackhall sandy loam, 0 to 15 percent slopes (60%)	Shallow aandy 10-14" PZ
	Elk Mountain loam, 0 to 15 percent slopes (20%)	Loamy 10-14" PZ
590	Blackhall-Blazon-Grieves complex, 3 to 30 percent slopea	
	Blackhall aandy loam 3 to 30 percent alopea (30%)	Shallow aandy 10-14" PZ
	Blazon loam, 3 to 30 percent slopes (20%)	Shallow loamy 10-14" PZ
	Grieves sandy loam, 3 to 10 perceot slopes (20%)	Sandy 10-14" PZ
591	Luhon-McFaddeo complex, 10 to 30 percent slopes	
	Luhon clay loam, 10 to 30 percent alopea (40%)	Loamy 10-14" PZ
	McPadden loam, 10 to 30 percent slopes (30%)	Shallow loamy 10-14" PZ
592	Luhon channery loam, 8 to 20 percent slopes	Shallow loamy 10-14" PZ
701	McCort gravelly loam, 0 to 10 percent slopes	Shallow loamy 15-19" PZ
702	Uinta-Scout complex, 2 to 30 percent alopea	
	Uinta sandy loam, 2 to 30 percent alopes (60%)	Woodland
	Scout cobbly sandy loam, 2 to 30 percent slopes (20%)	Woodland

1/ PZ = Precipitation zone in inches per year.

Methodology

For the purposes of establishing baseline soil and vegetation data, the Bureau mapped range sites in the Salt Wells and Pilot Butte planning units during the summers of 1979 and 1980. The following example illustrates the process:

After locating a soil mapping unit on the ground, the person doing the inventory completes a "Range Site Condition Writeup" form. Figure D-2 shows a form that has been completed for a Soil Map Unit 591 site. It can be seen that the area has two range sites:It is 35 percent shallow loamy, 10 to 14-inch P.Z., and 65 percent loamy, 10-14-inch P.Z. The plant species generally occurring in the climax community for each site are listed in the left column of each range site description. The "Present" (Pres) column indicates the current species present as a percentage of the total species composition. The middle column (Allow) shows the allowable percentage of each species according to the SCS Technical Guide, and the "Condition" (Cond) column is the percentage of the present community which matches favorably with the "Allowable" column.

Figure D-2 shows both range sites found within the Soil Map Unit 591 site to be in high fair condition with 45 and 43 percent climax vegetation compositions for shallow loamy and loamy, respectively. By calculating the acreage of this site, and determining the condition and acreage of all other sites within an allotment, the approximate condition of each allotment can be obtained.

METHODOLOGY FOR AUM ESTIMATES IN AREAS WITH VEGETATION TREATMENTS

Data Base

Information from the SaLUT soil inventories and the 1979-80 range site condition mapping data were used in these calculations.

Reference Material

The SCS Technical Guides on range sites, topographic maps, and aerial photos were consulted in making these calculations.

Assumptions

1. Sandy and loamy range sites in fair condition and within the higher precipitation zones (10 to 14-inch and 15 to 19-inch) would produce the greatest yield from land treatments relative to other range sites. Loamy sites are suitable for prescribed burns and chemical treatment, and sandy sites are more suitable for chemical treatment. Other sites may prove suitable in a field examination, but these sandy and loamy sites were those considered in the preparation of the EIS. Sandy sites in

RANGE SITE CONDITION WRITEUP

#No more than 5% of any species is allowable in the potential plant community.

MAP SYMBOL 590 X 591 ✓

Allotment Name & No. 4010 Sugar Loaf
SWA No. C372 Examiner CAGLE
Date 6/15/1979 Quad No. 22 + 23
Rock Springs District, Wyoming

*20% total allowed by forage class
a10% total allowed by forage class

SITE: SHALLOW LOAMY (SwLy) FAIR			
PERCENT/S.W.A. 35% PZ: 10-14	Pres	Allow	Cond
AGSP Bluebunch Wheatgrass		25	
AGRI Streambank Wheatgrass		20	
✓AGDA Thickspike Wheatgrass	10	20	10
AGSM Western Wheatgrass		20	
ORHY Indian Ricegrass		15	
SIHY Bottlebrush Squirreltail		10	
STLE4 Letterman Needlegrass		10	
STCO4 Needleandthread		10	
POCA Canby Bluegrass		5*	
POFE Mutton Bluegrass		5*	
CAMO Plains Reedgrass		5*	
KOCR Prairie Junegrass		5*	
✓POSE Sandberg Bluegrass	10	5*	5
CAEL2 Needleleaf Sedge		5*	
HEKI LOMA2UA AGGL Aster, Bluebells, Cerastium, Flax, Commandra, Haplppappus, Nailwort, Phacelia, Penstemon, Gilia, Phlox, Astragalus, Stanleya, Yarrow.	1 10	10#	10
SAGE ✓ARTR 2 Big Sagebrush	5 40	10	10
✓PUTR Bitterbrush	10	5a	5
✓CHVI8 Douglas Rabbitbrush	12	5a	5
RHTR Skunkbush		5a	
EULA5 Winterfat		5a	
✓ARARN [illegible] brush.	3	5a	3
TECA Special Habitat Feature Codes:	1		45

SITE: Loamy (Ly) FAIR			
PERCENT/ S.W.A 65% PZ: 10-14	Pres	Allow	Cond
✓AGDA Thickspike Wheatgrass	3	20	3
AGRI Streambank Wheatgrass		20	
AGSM Western Wheatgrass		20	
AGSP Bluebunch Wheatgrass		10	
POCA ✓Canby Bluegrass	7	10	7
STCO4 Needleandthread		10	
STLE4 Letterman Needlegrass		10	
POFE Mutton Bluegrass		5*	
CAMO Plains Reedgrass		5*	
KOCR Prairie Junegrass		5*	
POSE Sandberg Bluegrass		5*	
HEKI ✓Spike Fescue	10	5*	5
CAEL2 Needleleaf Sedge		5*	
CARI Threadleaf Sedge		5*	
SIHY Bottlebrush Squirreltail		5*	
ORHY Indian Ricegrass		5*	
DCLP SEMO2 Agoseris, American licorice, Aster, Buttercup, Cerastium, Fringed Sage, Gromwell, Larkspur, Lupine, Gilia, Violet, Yarrow, Phacelia, Penstemon.	10	15#	10
PUTR ARTR2✓ Big Sagebrush	5 55	10	10
ARPE6 Birdsfoot Sagewort		5a	
ARSP5 Bud Sagewort		5a	
OPUNT Cactus		5a	
✓CHVI8 Douglas Rabbitbrush	5	5a	5
✓AMAL Serviceberry	3	5a	3
ATCO Shadscale		5a	
TECA2 Spineless Horsebrush		5a	
GRSP Spiny Hopsage		5a	
TESP2 Spiny Horsebrush		5a	
EULA5 Winterfat		5a	
Special Habitat Feature Code:	2		43

Figure D-2 Sample Range Site Condition Writeup

the 7 to 9-inch precipitation zone were not considered because their lower potential, combined with the high cost of chemical treatment, makes it economically unfeasible to treat these sites. Although some shallow loamy and shallow sandy sites also have potential for investment return from vegetation treatment, none of these sites were considered for treatments.

2. Sandy and loamy range sites with slopes of less than 25 percent can be treated without significantly increasing the rate of erosion. Treatments on slopes up to 40 percent can be done successfully, but treatments on 25 percent slopes were considered the most applicable for the purposes of this document.
3. After treatment the areas would produce livestock forage that is equivalent to or greater than those sites in excellent condition. However, this high level of livestock forage production is expected to last only for the short term (less than ten years). However, it is expected that those areas could produce livestock forage, on a sustained basis that is equivalent to those sites in good condition, if proper grazing management is applied. The forage increases were based on this lower, sustained level of forage production.

Methodology

Using existing site data, areas which were determined to be suitable for vegetation treatments were located on topographic maps, and the total acreage of these sites was calculated. Stocking rates before and after treatment were estimated by using projected changes in condition and correlating the predicted changes with the stocking rates contained in the SCS range site guides. See Section B, part 8 of Figure D-1 for an example of these stocking rates.

Table D-2 illustrates the calculations involved in determining the AUMs that would be gained from the vegetation treatment. Of the 3,791-acre total in the area, 2,494 acres are suitable for either chemical treatment or prescribed burns (loamy sites) and 1,297 acres are suitable for chemical treatment only.

METHODOLOGY FOR PROJECTING CHANGES IN CONDITION AND PRODUCTION DUE TO GRAZING MANAGEMENT

Data Base

The SaLUT soil inventories and the 1979-80 range site mapping data were used in these calculations.

Assumptions

Production Increases (Proposed Action, Emphasize Livestock Production, and Emphasize Watershed, Wildlife Habitat, and Soil Stability)

The assumption is that implementation of intensive range management programs on Category "I" allotments would provide for improvement by one condition class in a 70-year period. This 70-year period is based on the life expectancy of the indigenous shrubs, particularly big sagebrush. The poor condition sites would be improved to fair and the fair to good. A lesser change is expected on the sites currently in good condition, and an improvement of one whole condition class (to excellent) is not projected. The production estimates are made at the 30-year level based on this assumption.

Production Decreases (Continuation of Existing Situation Alternative)

With current livestock distribution, preferred sites would continue to be overutilized. The assumption is that these preferrred sites would deteriorate from fair condition to poor. These preferred sites were identified as the wetland, subirrigated, saline subirrigated, lowland, loamy, and sandy sites presently in fair condition. This change from fair to poor condition is expected to happen within 30 years.

Table O-2

CALCULATIONS OF AUMS GAINED IN THE REO CREEK ALLOTMENT THROUGH VEGETATION TREATMENT UNDER THE EMPHASIZE LIVESTOCK PRODUCTION ALTERNATIVE

Range Site	Total Acres To Be Treated	Current Acres per AUM	Current Total AUMs	Acres per AUM After Treatment	Total AUMs After Treatment	Increase in AUMs From Treatment
Sandy (Sy) 10-14"	1,297	5.00	259	3.0	432	173
Loamy (Ly) 10-14"	870	5.00	174	3.0	290	116
Loamy (Ly) 15-19"	1,624	3.33	488	2.0	812	324
	3,791		921		1,534	613

Methodology

Projected Increases

The figures were calculated on an allotment basis for each of the "I" allotments. The stocking rates were calculated on the fair and poor condition sites by using the range site mapping data and the SCS range site technical guide. The current stocking rate was then increased by 6 percent every 10 years, based on a 50 percent increase (one condition class) in 70 years. At this rate of increase, the 30-year level calculates to a 19.1 percent increase in production. If less intensive grazing practices were prescribed in a particular allotment, 4 percent (per ten years increase) was used to reflect the slower expected response of the vegetation community. As this slower rate of increase, the 30-year level figures at a 12.5 percent production increase. The following example illustrates the forage increase calculation:

Mellor Mountain Allotment

8858	Current Stocking Rate (AUMs)
-1264	Production on Sites Currently in Good or Excellent Condition
7594	
-2800	Production on Lands Scheduled for Land Treatments
4794	Production on Fair and Poor Condition Sites, That Are Not Treated
+6%	
5082	Production Level in 10 Years (6% Increase)
+6%	
5387	Production Level in 20 Years (12.4% Increase)
+6%	
5710	Production Level In 30 Years (19.1% Increase)
5710	30-Year Level of Production on Fair and Poor Condition Sites
-4794	Current level of Production on Fair and Poor Condition Sites
	30-Year Increase in Production

Projected Decreases

The figures were calculated on an allotment basis in each of the "I" category allotments. The production on the preferred sites was calculated. That figure was decreased by one-third to reflect a decline of one condition class. This loss of production was then prorated equally over 30 years at 10-year intervals. The following example illustrates the forage decrease calculation:

Red Creek Allotment

2531	Current Production (AUMs) on Preferred Sites—Fair Condition
x.667	
1687	30-Year Level of Production on Preferred Sites—Poor Condition
2531	
-1687	
844	30-Year Forage Loss
2531	Present Forage Production on Preferred Sites
-281	
2250	10-Year Production on Preferred Sites
-281	
1969	20-Year Production on Preferred Sites
-282	
1687	30-Year Production on Preferred Sites

METHODOLOGY FOR COMPUTING AUMS MADE AVAILABLE THROUGH WATER DEVELOPMENTS

Development of water would enable the use of forage presently unavailable to livestock. The adjudicated stocking rates were presumably established based on total forage, determined by the 1963 range survey. The water developments are needed to fully utilize forage already included in the current stocking rate. As a result no additional AUMs are expected from water development.

APPENDIX D

Data Base

In consultation with local livestock operators during s are the summer and fall of 1980, the Bureau located on topographic maps most of the water sources known to be used by livestock. The standing water inventory conducted in 1979 and the BLM project files were also used to locate current stocking rate. water. A set of criteria As a has been established by the Bureau to identify areas that are suitable, potentially suitable, and unsuitable range for livestock with respect to steepness of slope and distance from water.

Suitable is defined as currently available to livestock. Potentially suitable means that forage is currently unavailable due to a combination of distance from water and steepness of slope. Unsuitable is defined as too steep for livestock use. Some rangeland; e.g., rock outcrop and badlands; has a carrying capacity of less than one AUM for 32 acres. These areas are also considered unsuitable.

Table D-3 shows the total acres classified under each category. This information was portrayed on topographic maps, which were used to determine the locations within allotments where water developments were needed.

Assumptions

1. Rangeland that is potentially suitable for livestock can be made suitable through water developments.
2. Potentially suitable rangeland contains approximately the same average acres per AUM as the rest of the allotment unless the potentially suitable area is badlands or other unproductive area.

Methodology

Water developments (spring developments where applicable and reservoirs in appropriate drainages) were plotted in the most likely locations near potentially suitable range areas. The following example illustrates the calculations involved in computing the AUMs in potentially suitable areas that would become available in the Red Creek Allotment due to water developments in the proposed action:

1. Productive acres per AUM = 9.1.
2. Productive acres of potentially suitable range = 6,412.

Table D-3

ACRES OF LAND WITHIN EACH ALLOTMENT CLASSIFIED
AS UNSUITABLE, POTENTIALLY SUITABLE, OR SUITABLE FOR LIVESTOCK

No.	Allotment	Unsuitable	Potentially Suitable	Suitable
3018	Rock Springs (South of Interstate)	11,013	214,780	906,925
4000	Sage Creek	429	5,965	17,961
4001	Circle Springs	0	3,330	18,971
4002	Rife	535	2,113	42,057
4003	Vermillion Creek	1,111	6,800	141,282
4004	Alkali Creek	583	1,609	27,617
4005	Crooked Wash	0	1,963	9,180
4006	Horseshoe Wash	0	161	7,502
4007	Pine Mountain	401	2,626	67,605
4008	Red Creek	1,101	7,311	60,626
4009	Salt Wells	1,836	4,249	47,110
4010	Sugarloaf	2,184	4,766	85,035
4011	Spring Creek	296	4,091	41,085
4012	Henrys Fork			
	Pasture A	145	2,191	46,361
	Pasture B	151	3,848	23,950
	Pasture C	504	2,141	60,278
	Pasture D	530	2,828	43,178
	Pasture E	858	7,594	68,390
	Pasture F	1,110	7,981	67,350
4013	Hickey Mountain	30	1,154	7,223
4014	Larson	0	0	1,943
4015	Stag Hollow	0	0	1,889
4016	Donohoo	0	0	992
4017	Poison Creek	0	0	724
4018	Bald Hills	0	575	4,942
4019	Hanks	0	0	3,571
4020	Hisey Hollow	0	0	918
4021	Cedar Point	21	103	1,316
4022	Antelope Wash	717	396	7,023
4023	Circle Bar	0	0	652
4024	Sage	14	7	2,389
4025	Cottonwood	961	727	3,000
4026	Peoples Canal	0	0	2,207
4027	Mellor Mountain	1,591	4,665	64,057
		26,121	293,974	1,885,309

3. 6,412 ÷ 9.1 yields 705 AUMs from potentially suitable range.
4. Project development of two springs and eight reservoirs.
5. Estimate the acres of potentially suitable facilitated by water development; in this case, 4,935 acres.
6. 4,935 acres ÷ 9.1 (average acres per AUM) = 542 AUMs made available.
7. Calculate acres and AUMs still potentially suitable; in this case, 1,477 acres and 163 AUMs.
8. Withdraw areas which can be utilized by sheep, winter use (the criterion was most applicable for open range summer cattle), or heavy stocking in a pasture use format; in this case, 429 acres and 47 AUMs. This factor is subjective, and was estimated for each allotment based on the terrain and knowledge of the area's grazing use patterns.

METHODOLOGY AND CALCULATIONS FOR WILDLIFE

Calculation of Big Game Population Estimates by Allotment

Big game population estimates for each allotment (Table D-4) were made based onthree factors: The recommended "objective" numbers in the MFP (WL-1.5) by allotment based on the Wyoming Game and Fish Department's request by allotment; the current herd unit objectives; and the current herd unit population estimates. Population estimates were made using the following method, based on the assumption that the population estimate of the allotment is the same proportion to the allotment population objective as the herd unit population estimate is to the herd unit population objective:

$$\text{Allotment Population Estimate} = \text{Allotment Population Objective} \times \frac{\text{Herd Unit Population Estimate}}{\text{Herd Unit Population Objective}}$$

The population estimates were made on summer (huntable) animals because populations for that season are more applicable for use in the benefit/cost analyses. Once those estimates were established, they were used as a basis for projecting wildlife populations for each alternative. Since each alternative contains a set of different circumstances affecting wildlife populations, a slightly different methodology was required for each alternative in order to project wildlife population changes. The following discussion describes the methodology used for each alternative.

Calculation of Big Game Population Changes by Alternative

Proposed Action

Assumptions:

1. All forage increases would go to livestock until suspended preference has been restored, after which any additional increases would be divided equally between wildlife and livestock.
2. Forage increases realized from the grazing systems would provide forage for wildlife.
3. Current stocking rates in each allotment would support an existing population of big game animals. Any changes in the stocking rate, due to increases or decreases in forage, would be reflected in corresponding changes in big game animal numbers.
4. To estimate the changes in big game numbers, forage increases designated for wildlife need to be adjusted for the following factors: body weight conversions, competition factors, and the percent of each big game species within the allotment.

Projections of population changes (by big game species) were developed from the above assumptions using the following calculation:

$$A = [(B \times (C \div D)] + [(E \times F \times G \times H) \div I]$$

Where:

APPENDIX D

A = Wildlife Population Change
B = AUM Increases from the Grazing System
C = Existing Wildlife Population
D = Existing Livestock Stocking Rate in AUMs
E = AUM Increases to Wildlife
F = Conversion Factor (See Table D-5)
G = Competition Factor (See Table D-6)
H = Percent of Applicable Wildlife Species in the Allotment
I = 12 Months

Example: Deer population changes in the Mellor Mountain Allotment.

Deer Population Change = [(1301 x (234 ÷ 9126)] + [(0 x 7.6 x 0.15 x 0.051) ÷ 12)]

Changes in Deer Numbers = 34 animals

Continuation of the Existing Situation

Assumptions:

1. No grazing systems and no vegetation treatments would be undertaken in this alternative. Little additional forage is anticipated, except in the Henrys Fork and Fourth of July allotments. In most allotments, a decrease in forage is expected. Current stocking rates in each allotment support an existing population of big game animals. Any changes in the availability of forage would be reflected in corresponding changes in big game animal numbers.

Projections of population changes (by big game species) were developed from the above assumptions using the following calculation:

A = [B x (C ÷ D)]

Where:

A = Wildlife Population Change
B = Change in AUMs
C = Existing Wildlife Population by Species
D = Existing Livestock Stocking Rate in AUMs

Example: Antelope population changes in the Spring Creek Allotment.

Antelope Population Change = (-535) x (441 ÷ 4398)

Antelope Population Change = -64

Table D-4

ESTIMATED BIG GAME POPULATIONS BY ALLOTMENT
(Based on 1981 Data)

Allotment	Type of Use 1/	Antelope 2/		Mule Deer 2/		Elk 2/		Moose
Fourth of July	1	45	(69)	12	(19)	8	(12)	---
Rock Springs	3	2,747	(70)	1,128	(29)	36	(1)	---
Sage Creek	1	38	(19)	134	(68)	24	(13)	---
Circle Springs	3	62	(48)	68	(52)	---		---
Rife	2	137	(49)	140	(51)	---		---
Vermillion Creek	3	626	(41)	909	(59)	---		---
Alkali Creek	2	205	(45)	252	(55)	---		---
Crooked Wash	2	116	(29)	286	(71)	---		---
Horseshoe Wash	3	47	(39)	72	(61)	---		---
Pine Mountain	3	648	(44)	746	(50)	82	(6)	---
Red Creek	1	199	(26)	529	(68)	47	(6)	---
Salt Wells	1	265	(70)	98	(26)	14	(4)	---
Sugarloaf	1	63	(9)	454	(67)	162	(24)	---
Spring Creek	1	441	(68)	163	(25)	46	(7)	---
Henrys Fork	3	3,036	(83)	641	(17)	---		---
Hickey Mountain	1	---		39	(75)	13	(25)	---
Laraon	3	14	(78)	4	(22)	---		---
Stag Hollow	2	14	(78)	4	(22)	---		---
Donohoo	3	14	(100)	---		---		---
Poison Creek	1	14	(100)	---		---		---
Bald Hills	1	---		11	(92)	1	(8)	---
Hanks	1	---		11	(100)	---		---
Hisey Hollow	1	---		1	(100)	---		---
Cedar Point	1	---		4	(100)	---		---
Antelope Wash	1	27	(84)	5	(16)	---		---
Circle Bar	1	---		---		---		---
Sage	2	14	(78)	4	(22)	---		---
Cottonwood	1	20	(77)	6	(23)	---		---
Peoples Canal	1	---		---		---		---
Mellor Mountain	3	210	(46)	234	(51)	17	(3)	---

1/ Numbers represent the kind of livestock use in an allotment as follows; 1 = Cattle Allotment; 2 = Sheep Allotment; and 3 = Cattle and Sheep Allotment.

2/ Numbers in parentheses represent the percentage of each big game species by allotment; for example: in the Fourth of July Allotment, 69% of the big game animals in the allotment are antelope, 19% are mule deer, and 12% are elk.

Table D-5

FDRAGE REQUIREMENTS AND CONVERSIDN FACTORS FDR WILDLIFE AND LIVESTOCK SPECIES

Speciea	Forage Requirement	Converaion Factor
Antelope	74 lbs/month	10.5 animals/AUM
Deer	103 lba/month	7.6 animals/AUM
Elk	374 lba/month	2.1 animals/AUM
Mooae	652 lbs/month	1.2 animals/AUM
Cattle	780 lbs/month	1.D animal/AUM
Sheep	150 lba/month	5.2 animals/AUM

*Values agreed upon by Wyoming Game and Fish Department, University of Wyoming, and the Bureau of Land Management in a July 1980 meeting. From BLM Instruction Memorandum No. WY-81-68 (18 November 1980).

Table D-6

FDRAGE COMPETITIDN FACTDR IN PERCENT BETWEEN SPECIFIC SPECIES AND LIVESTOCK

Kind of Liveatock Uae	Antelope	Mule Deer	Elk
1-Cattle Allotment	8	15	55
2-Sheep Allotment	21	14	30
3-Cattle/Sheep Allotment	15	15	43

Valuea from BLM Instruction Memorandum No. WY-040-75-76 Change L (6 February 1976).

Emphasize Livestock Production

Assumptions:

1. No forage is currently reserved for wildlife and no additional forage increases resulting from the actions of this alternative are planned for wildlife.
2. Current stocking rates in each allotment support an existing population of big game animals. Any changes in the stocking rate, due to increases or decreases in forage, would be reflected in corresponding changes in big game animal numbers.
3. Forage increases realized from the grazing systems would provide forage for wildlife.
4. Wildlife forage losses in the vegetation treatment areas would offset any wildlife forage gains because any forage gains would be licensed to livestock. Therefore, forage increases realized from the vegetation treatments would not provide forage for big game wildlife species.

Projections of population changes (by big game species) were developed using the following calculation:

$A = (B - C) \times (D \div E)$

Where:

A = Wildlife Population Change
B = AUM Increases from the Grazing System
C = AUM Increases from the Vegetation Treatments
D = Existing Wildlife Population
E = Existing Livestock Stocking Rate in AUMs

Example: Antelope population changes in the Salt Wells Allotment.

Antelope Population Change= (576 - 1190) x (265 ÷ 4258)
= (-614 x 0.57)

Antelope Population Change= -35

Emphasize Watershed, Wildlife Habitat, and Soil Stability

Assumptions:

1. All forage increases would go to wildlife. The livestock use would remain at current levels.
2. Because the livestock stocking rate would remain at current levels, it is assumed that all treatments (grazing systems and vegetation treatments) would be beneficial to wildlife. Although some browse would be lost to wildlife in the short term, long-term forage increases combined with stabilized livestock use should enhance habitat for wildlife.

3. To estimate changes in big game numbers, forage increases to wildlife (from the grazing systems and the vegetation treatments) need to be adjusted by the following factors: body weight conversions, competition factors, and the percent of each species within the allotment.

Projections of population changes (by big game species) were developed from the above assumptions using the following calculation:

A = (B + C) x [(D x E x F) ÷ G]

Where:

A = Wildlife Population Change
B = AUM Increases from Grazing System
C = AUM Increases from Vegetation Treatments
D = Conversion Factor (See Table D-5)
E = Competition Factor (See Table D-6)
F = Percent of the Applicable Wildlife Species in the Allotment
G = 12 Months

Example: Elk population changes in the Sugarloaf Allotment.

Elk Population Change = (802 + 638) x [(2.1 x 0.55 x 0.24) ÷ 12]

Elk Population Change = 33 animals

License No Livestock Use on Public Lands

Assumptions:

1. No forage would be allocated to livestock from the public lands, but each operator having unfenced, privately controlled lands would be allowed to operate at the recognized stocking rates of their private lands over the entire allotment acreage.

2. The forage on public lands would be available to wildlife species. To arrive at an estimate of changes in animal numbers, these changes in available forage need to be adjusted for body weight conversions, competition factors, and the percent of each species within the allotment.

Projections of population changes (by big game species) were developed from the above assumptions using the following calculation:

A = [(B x C x D x (E ÷ F)] - G)

Where:

A = Wildlife Population Change
B = Current Livestock Stocking Rates in AUMs
C = Conversion Factor (See Table D-5)
D = Competition Factor (See Table D-6)
E = Number of Animals by Species in the Allotment
F = Total Number of Big Game Animals in the Allotment
G = 12 Months

The projected changes in wildlife numbers, by alternative, are shown in Table D-7.

Example: Deer population changes in the Pine Mountain Allotment.

Deer Population Change = [(8,600 x 7.6 x 0.15 x (746 ÷ 1,476)] ÷ 12

Deer Population Change = 408

Table D-7

PROJECTED CHANGES IN WILDLIFE NUMBERS BY ALTERNATIVE

Alternative	Antelope	Mule Deer	Elk	Moose
Emphaeize Livestock Production	-233	-3	-4	0
Proposed Action	409	382	41	0
Emphaeize Weterehed, Wildlife Habitet, and Soil Stebility	744	571	64	0
Contioustion of Existing Situstion	-259	-493	-67	0
License No Livestock Use on Public Laods	15,967	6,504	1,109	0

Table D-8

PROJECTED HARVEST BY ALTERNATIVE

Alternative	Antelope	Mule Deer	Elk	Mooee
Emphasize Liveetock Production	-27.0	-0.25	-0.5	0
Proposed Action	47.0	29.4	5.1	0
Empheeize Weterehed, Wildlife Habitat, end Soil Stability	85.5	44.0	8.0	0
Continuation of the Existing Situstion	-30.0	-38.0	-8.4	0
License No Livestock Use on Public Lands	1,836.0	500.8	138.5	0

APPENDIX D

Derivation of Hunter-Day Figures

Hunter-days refers to the days of recreational hunting provided by an increase in numbers of animals, or lost due to a reduced number of huntable animals. Hunter-days are calculated from the projected changes in wildlife (by species) resulting from the proposed action and each alternative. Because not every additional animal is harvested, the projected change in wildlife numbers must be adjusted by the average harvest figure provided by the Wyoming Game and Fish Department. Once this adjustment is made the resulting figure must be multiplied by the average number of days required to harvest a big game animal (by species).

The numbers in Table D-7 need to be adjusted by the percent of the herd harvested (statewide average for 1980):

	Percent of Herd Harvested
Antelope	11.5
Mule Deer	7.7
Elk	12.5

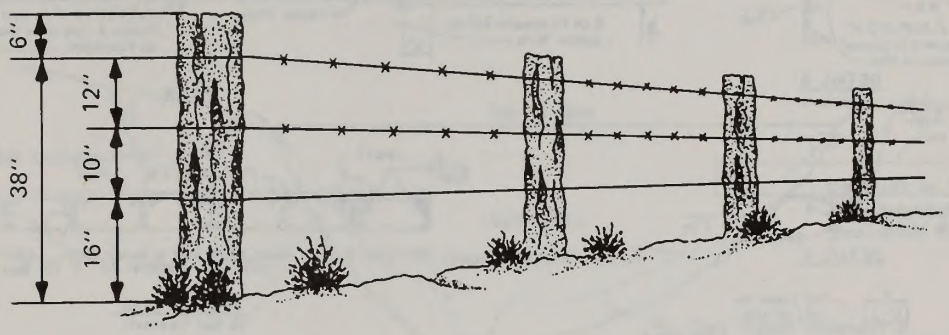
This calculation results in the average harvest (Table D-8) to be expected from the changes in wildlife numbers from each alternative.

The numbers in Table D-8 must now be multiplied by the average number of days required to harvest a big game animal by species. The 1980 state average is as follows:

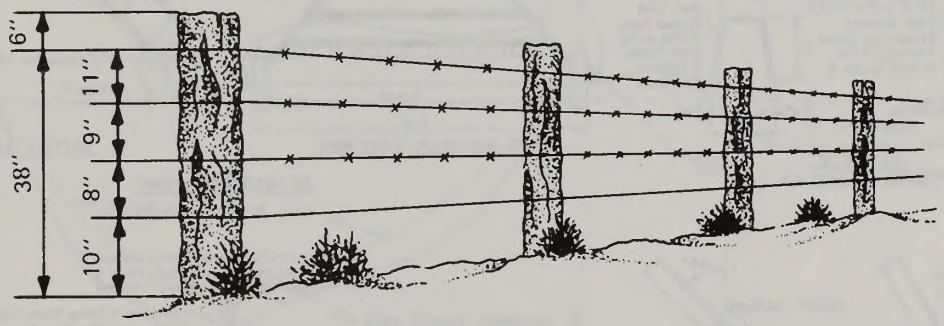
Species	Average Days/Harvest
Antelope	2.0
Mule Deer	6.6
Elk	19.7

Multiplying the projected harvest by the average days per harvest results in hunter-days shown in Table 2-22.

Appendix E
TYPICAL RANGE IMPROVEMENT PROJECT PLANS



Typical Three Strand Fence



Typical Four Strand Fence

In most cases a three strand (wire) fence would be sufficient to hold stock. However, in some cases four strands would be necessary to effectively retard livestock drift.

Figure E-1
PROPOSED RANGE FENCES

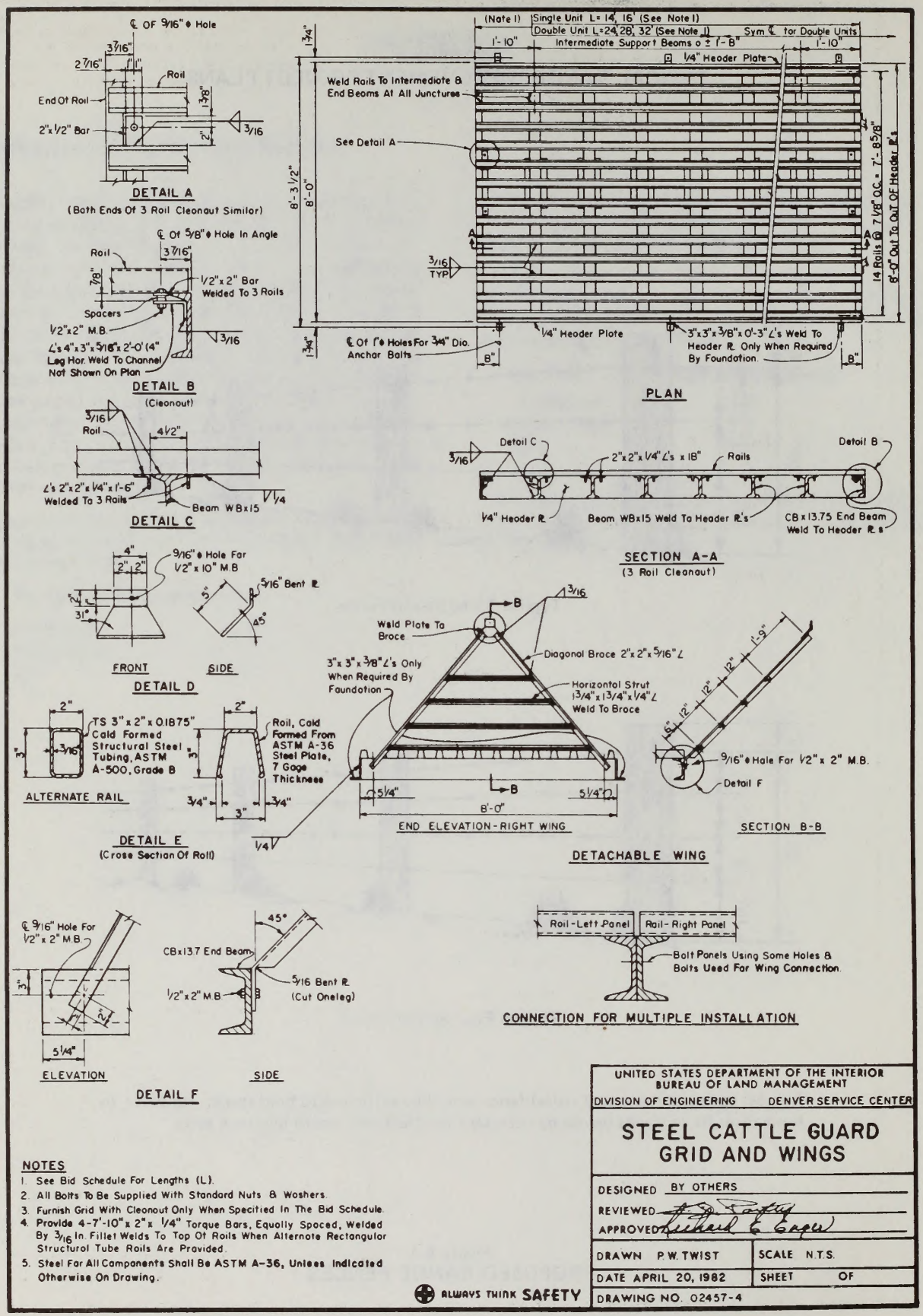


Figure E-2
STEEL CATTLEGUARD GRID AND WINGS

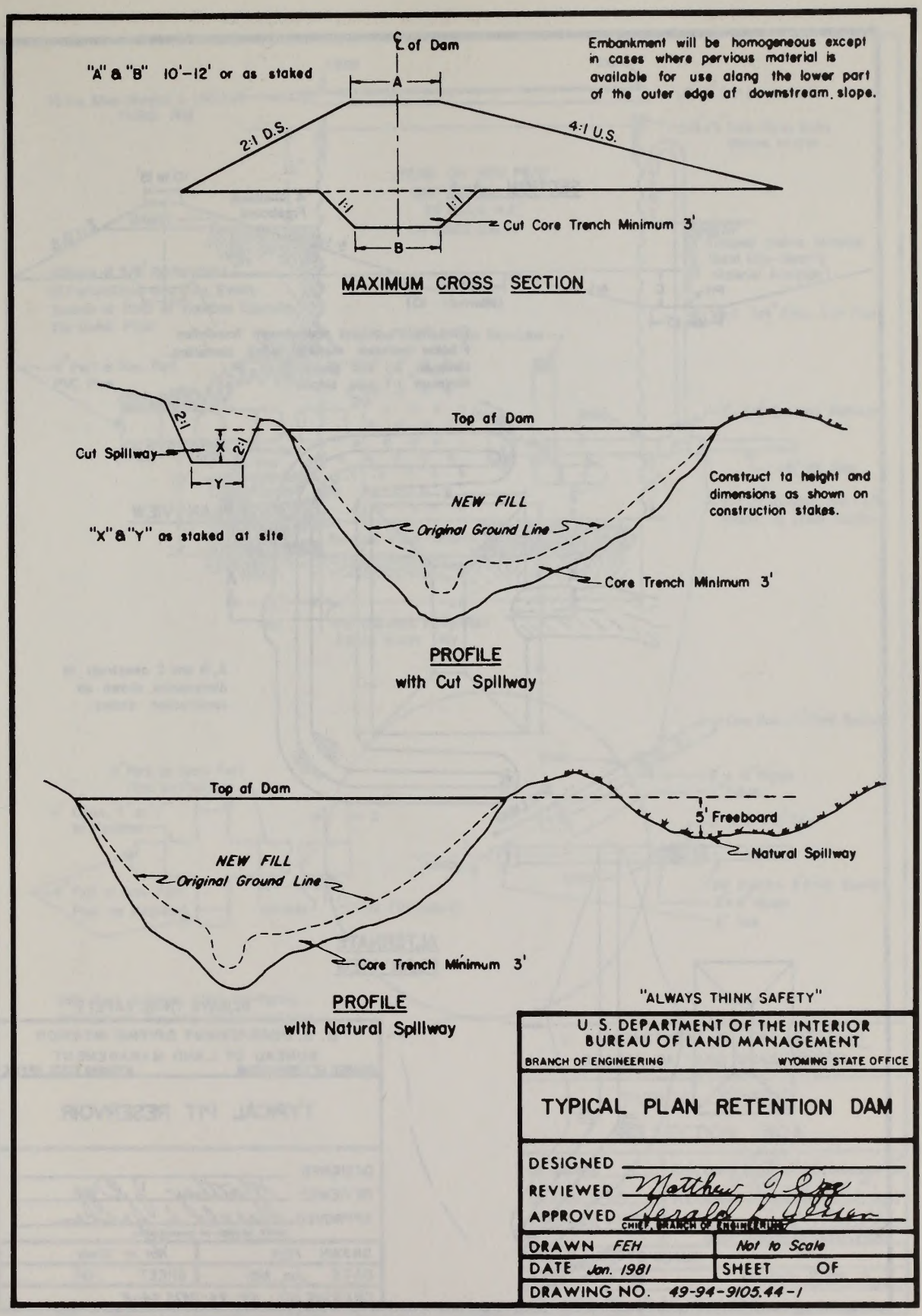


Figure E-3
TYPICAL PLAN FOR RETENTION DAM

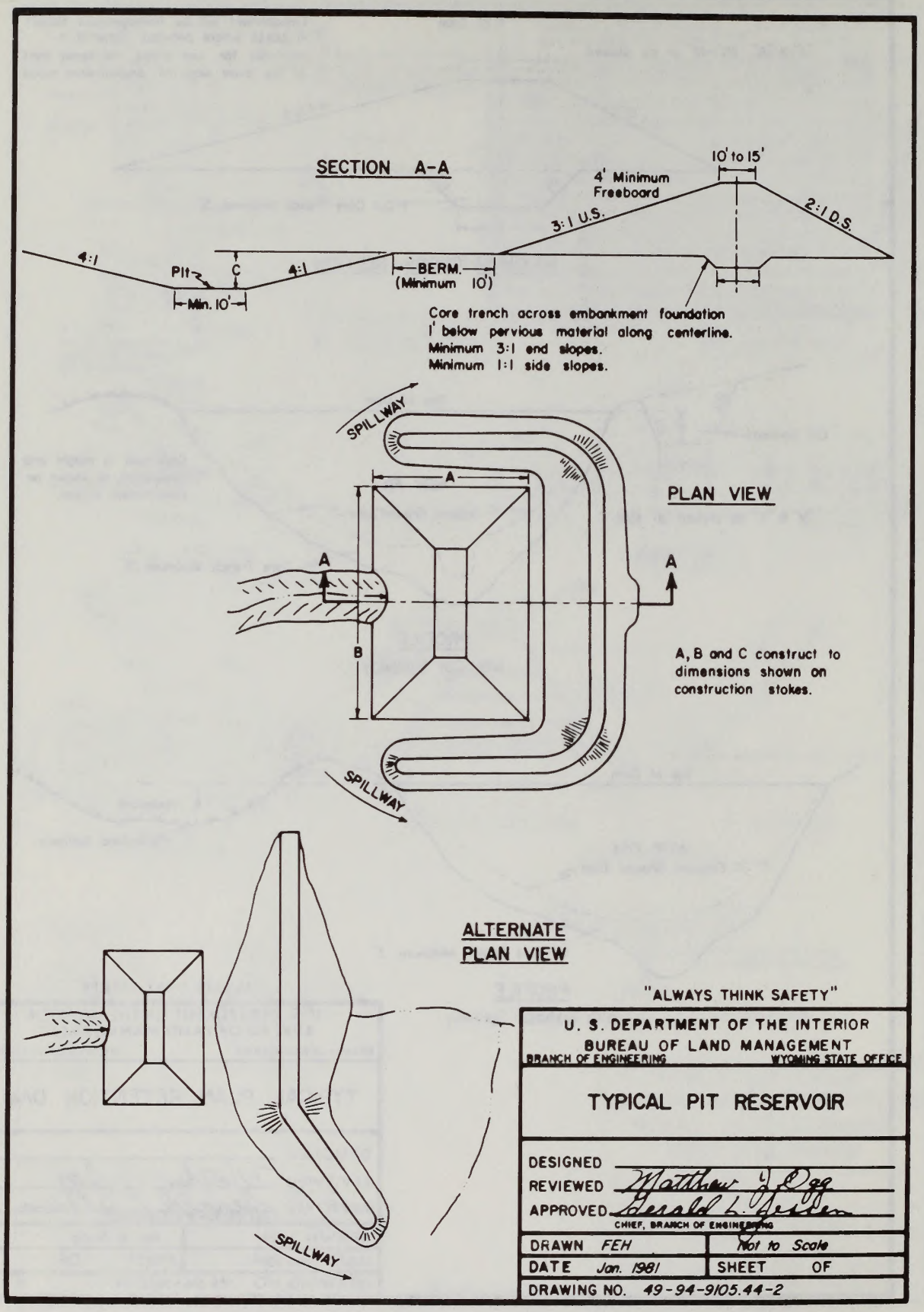


Figure E-4
TYPICAL PIT RESERVOIR

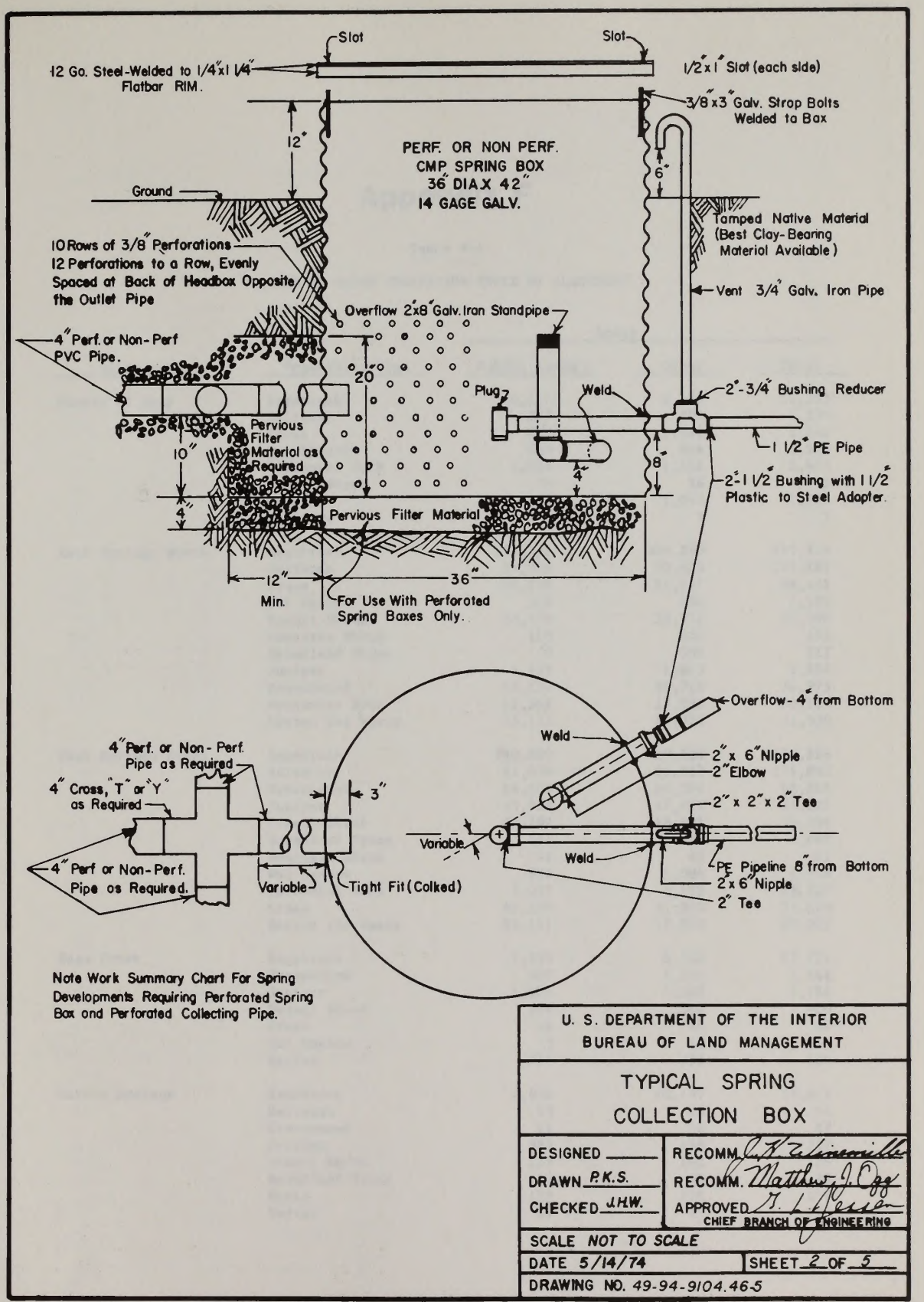
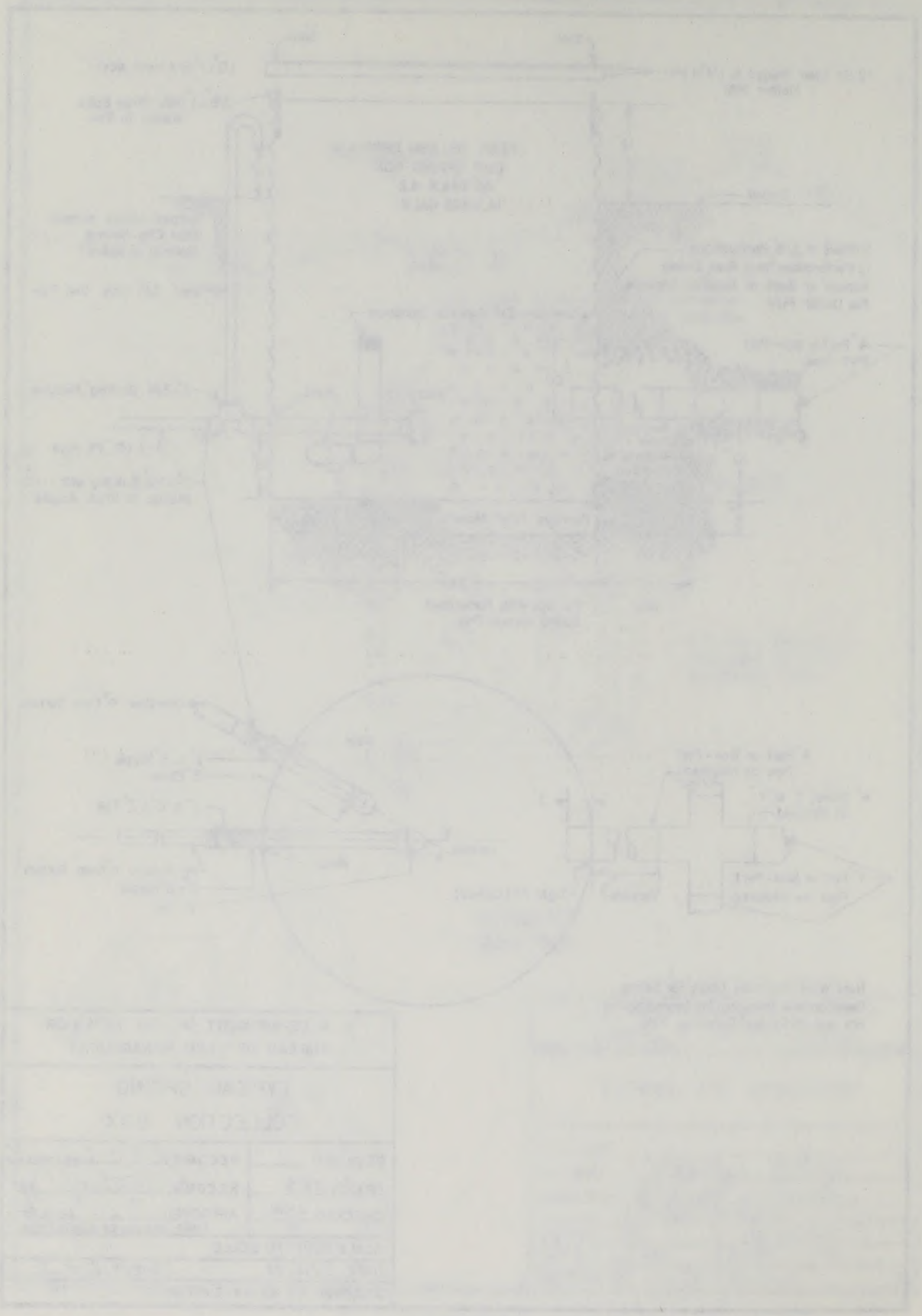


Figure E-5
TYPICAL SPRING COLLECTION BOX



Appendix F

Table F-1

ACRES OF MAJOR VEGETATION TYPES BY ALLOTMENT

Allotment	Vegetation Type	Acres		
		Public Lands	Other	Total
Fourth of July	Sagebrush	6,157	6,278	12,235
	Saltbush	507	822	1,330
	Grass	847	1,393	2,240
	Wet Meadow	680	866	1,546
	Perennial Forb	1,266	1,142	2,408
	Desert Shrub	37	26	63
	Barren	458	1,042	1,500
	Conifers	0	5	5
Rock Springs North	Sagebrush	231,226	388,250	619,476
	Saltbush	53,956	70,825	124,781
	Grass	38,834	55,617	94,451
	Wet Meadow	314	788	1,102
	Desert Shrub	23,429	35,961	59,390
	Mountain Shrub	110	322	432
	Broadleaf Trees	3	309	312
	Juniper	1,959	1,975	3,934
	Greasewood	16,255	20,718	36,973
	Perennial Forb	12,565	17,590	30,155
	Barren and Waste	13,155	18,375	31,530
Rock Springs South	Sagebrush	280,800	290,526	571,326
	Saltbush	91,038	83,857	174,895
	Greasewood	24,600	24,299	48,899
	Juniper	43,954	47,871	91,825
	Desert Shrub	20,792	18,507	39,299
	Broadleaf Trees	281	801	1,082
	Mountain Shrub	41	40	81
	Wet Meadow	896	1,004	1,910
	Perennial Forb	7,035	6,152	13,187
	Grass	41,559	31,820	73,679
	Barren and Waste	30,111	17,930	48,041
Sage Creek	Sagebrush	7,329	8,448	15,777
	Greasewood	560	1,102	1,662
	Juniper	1,596	1,588	3,184
	Desert Shrub	396	584	980
	Grass	16	48	64
	Wet Meadow	3	46	49
	Barren	375	233	608
Circle Springs	Sagebrush	7,828	10,149	17,977
	Saltbush	69	25	94
	Greasewood	11	76	87
	Juniper	589	168	757
	Desert Shrub	123	102	225
	Broadleaf Trees	47	48	95
	Grass	179	278	457
	Barren	29	41	70

Table F-1
(Continued)

Allotment	Vegetation Type	Acres		
		Public Lands	Other	Total
Rife	Sagebrush	17,821	18,364	36,185
	Saltbush	1,668	2,149	3,817
	Greasewood	452	624	1,076
	Juniper	533	409	942
	Desert Shrub	95	151	246
	Broadleaf Trees	87	26	113
	Grass	935	706	1,641
	Wet Meadow	51	131	182
	Barren	59	363	422
Vermillion Creek	Sagebrush	70,309	4,529	74,838
	Saltbush	29,823	1,235	31,058
	Greasewood	7,617	691	8,308
	Juniper	16,817	954	17,771
	Desert Shrub	1,667	25	1,692
	Perennial Forb	1,081	17	1,098
	Grass	8,027	221	8,248
	Wet Meadow	384	95	479
	Barren	3,860	365	4,226
Alkali Creek	Sagebrush	12,292	962	13,254
	Saltbush	12,090	1,158	13,248
	Greasewood	300	164	464
	Juniper	182	0	182
	Desert Shrub	928	13	941
	Perennial Forb	14	0	14
	Grass	1,023	73	1,096
	Barren and Waste	99	2	101
Crooked Wash	Sagebrush	3,111	32	3,143
	Saltbush	3,670	71	3,741
	Greasewood	278	4	282
	Juniper	152	14	166
	Desert Shrub	1,814	0	1,814
	Grass	1,529	56	1,585
	Barren	399	14	413
Horseshoe Wash	Sagebrush	2,560	217	2,777
	Saltbush	2,864	272	3,136
	Greasewood	292	80	372
	Desert Shrub	276	0	276
	Grass	268	0	268
	Barren	34	9	43
Pine Mountain	Sagebrush	42,820	6,636	49,456
	Saltbush	7,058	502	7,560
	Greasewood	1,175	224	1,399
	Juniper	4,570	561	5,131
	Broadleaf Trees	44	45	89
	Conifer	3,191	951	4,142
	Mountain Shrub	136	3	139
	Perennial Forb	259	12	271
	Wet Meadow	391	212	603
	Grass	487	524	1,011
	Barren	737	94	831

Table F-1
(Continued)

Allotment	Vegetation Type	Acres		
		Public Lands	Other	Total
Red Creek	Sagebrush	20,603	5,913	26,516
	Saltbush	2	0	2
	Greasewood	733	8	741
	Juniper	31,548	2,664	34,212
	Broadleaf Trees	367	45	412
	Conifers	1,609	514	2,123
	Desert Shrub	58	0	58
	Perennial Forb	499	156	655
	Wet Meadow	15	37	52
	Grass	619	139	758
	Barren	2,328	99	2,427
Salt Wells	Sagebrush	36,050	7,840	43,890
	Saltbush	406	22	428
	Greasewood	153	56	209
	Juniper	3,487	422	3,909
	Broadleaf Trees	702	335	1,037
	Conifer	477	67	544
	Mountain Shrub	320	13	333
	Meadow	242	31	273
	Grass	229	158	387
	Barren	260	73	333
Sugarloaf	Sagebrush	55,287	3,992	59,279
	Greasewood	2,065	116	2,181
	Juniper	16,237	698	16,935
	Broadleaf Trees	898	55	953
	Conifer	59	1	60
	Desert Shrub	349	89	438
	Perennial Forb	167	0	167
	Grass	254	0	254
	Barren	624	114	738
Spring Creek	Sagebrush	12,611	716	13,327
	Greasewood	1,403	238	1,641
	Juniper	21,959	810	22,769
	Perennial Forb	290	0	290
	Grass	123	0	123
	Barren	531	12	543
Henrys Fork	Sagebrush	161,937	7,443	169,380
	Saltbush	49,279	1,551	50,830
	Greasewood	6,412	368	6,780
	Juniper	26,474	2,565	29,039
	Desert Shrub	4,912	54	4,966
	Perennial Forb	9,414	109	9,523
	Wet Meadow	25	0	25
	Grass	8,993	558	9,551
	Barren and Waste	11,537	176	11,713
Hickey Mountain	Sagebrush	596	2	598
	Greasewood	102	216	318
	Juniper	5	0	5
	Grass	142	9	151
	Barren	345	0	345
Larson	Sagebrush	990	801	1,791
	Wet Meadow	46	106	152
Stag Hollow	Sagebrush	1,889	0	1,889
Donohoo	Sagebrush	945	47	992
Poison Creek	Sagebrush	699	25	724
Bald Hills	Sagebrush	4,325	366	4,691
Hanks	Sagebrush	2,557	178	2,735
	Juniper	836	0	836

Table F-1
(Continued)

Allotment	Vegetation Type	Public Lands	Other	Total
Hisey Hollow	Sagebrush	638	40	678
	Saltbush	207	13	220
	Greasewood	20	0	20
Cedar Point	Sagebrush	514	0	514
	Juniper	662	0	662
	Mountain Shrub	192	0	192
	Perennial Forb	73	0	73
Antelope Wash	Sagebrush	7,669	289	7,958
	Saltbush	74	0	74
	Perennial Forb	92	0	92
	Barren	12	0	12
Circle Bar	Sagebrush	438	6	444
	Wet Meadow	208	0	208
Sage	Sagebrush	2,326	0	2,326
	Greasewood	43	0	43
	Saltbush	42	0	42
Cottonwood	Sagebrush	4,500	125	4,625
	Greasewood	37	6	43
	Juniper	21	0	21
Peoples Canal	Sagebrush	735	556	1,291
	Saltbush	100	22	122
	Juniper	351	385	736
	Barren	48	9	57
Mellor Mountain	Sagebrush	48,036	6,898	54,934
	Saltbush	1,293	339	1,632
	Greasewood	1,370	580	1,950
	Juniper	4,296	76	4,372
	Desert Shrub	6	0	6
	Broadleaf Trees	114	76	190
	Mountain Shrub	114	26	140
	Perennial Forb	24	0	24
	Wet Meadow	184	80	264
	Grass	2,992	843	3,835
	Barren	753	52	805

APPENDIX G

THE OBJECTIVES AND SCIENTIFIC PRINCIPLES ASSOCIATED WITH THE PROPOSED GRAZING TREATMENTS

The effects of continuous livestock grazing in the absence of periodic rest or deferment can be seen in most of the allotments within the Salt Wells-Pilot Butte area. Livestock are selective as to which plants they will eat and what areas they will graze. Cattle tend to graze the most palatable plants first and heaviest, and spend most of their time in easily accessible areas such as stream bottoms, meadows, and areas near water developments (Stoddart, Smith, and Box 1975).

Unfortunately, these heavily used areas are frequently the most productive range sites (pers. comm., Voigt 1982). Continuous yearly grazing will eventually kill the most desirable plants (Hormay 1970). The space vacated by the dead plants is taken by other, normally less desirable plants or remains bare soil that is subject to increased erosion rates (Hormay 1970). Cattle are then forced to extend their grazing pattern, broadening the area of overuse.

To understand the cause of this range deterioration process, a discussion of plant growth requirements and how grazing affects these plants is essential. Plants produce their own food from energy produced in the photosynthetic process within the leaf. Energy which is not used for growth and respiration is stored in the roots as carbohydrates (Hormay 1970). As the plant begins growth, it has little or no leaf tissue to synthesize food. Initial growth is sustained by carbohydrate reserves (stored from previous years) in the roots of existing plants and the seed tissue of new plants. As the grass shoot approaches half its full growth, carbohydrate reserves are at their lowest point (Hormay 1970).

At this time, the plant has sufficient leaf area to produce more energy than it requires for maintenance and growth (Martin 1978). Excess food is then transported back to the roots for use as energy for fall regrowth, for respiration during dormancy, and for initial growth the following year. Seed production and dispersal is required to assure reproduction of many perennial species. When the seeds have matured, energy reserves within the plant's roots are at their peak (Martin 1978). A plant approaching dormancy may be grazed without reducing the plant's vigor. After being grazed in early spring, or spring through summer, the plant requires some period of nonuse to sustain vigor. This nonuse can be incorporated into a grazing system in the form of "rest" or "deferment". When an allotment is rested or deferred, plants are given an opportunity to regain vigor, seeds ripen, seedlings are established, and litter (which supplied ground cover, and leads to organic material accumulation in the soil) accumulates between plants. These are the four plant growth requirements (Hormay 1970). There are many combinations of rest and deferment. A sound grazing treatment will time the grazing and rest cycle to satisfy plant growth requirements to the extent possible. A successful grazing treatment must not only satisfy plant growth requirements, but must be adapted to soil conditions; favor desired plants; not inhibit animal gains; and be practical in a livestock operation (Stoddart, Smith, and Box 1975). Through regulated grazing management, the above objectives may be satisfied. Hormay (1970) notes:

APPENDIX G

> Livestock can be used to perform many important functions that can be achieved no other way over the entire or major portion of the range. They can be used to trample seed into the soil thereby promoting more forage and a better soil cover; to remove stifling old growth on plants, thus increasing plant vigor and production of usable herbage; to stimulate adventitious growth and higher quality forage; and to reduce fire hazard.

A deferred treatment delays grazing up to the time that seeds have matured (Heady 1970). This delay allows new plants to become established and gives old plants an opportunity to regain vigor and produce seed (Stoddart, Smith, and Box 1975). When livestock are turned into a deferred pasture, they will scatter and trample the seed, which, in effect, plants the seeds and softens the soil surface crust through hoof action (Stoddart, Smith, and Box 1975). Hoof action also breaks down organic litter, increasing litter-topsoil contact which protects exposed soil and augments seedling establishment (Majors 1982).

A rest treatment eliminates grazing for an entire year (Heady 1970); thus seedlings are given the opportunity to become established. Plants that were previously grazed are allowed to regain vigor and produce seed. Litter production is increased because mature growth is not grazed after seed maturity. The above ground portion of mature vegetation is allowed to cure and die, some of which will cover the soil as litter. No two grazing systems are alike. Each must be developed to incorporate the local terrain, vegetation, climate, and mode of livestock operation. Furthermore flexibility must be maintained throughout all grazing management systems. Management is not set in an unyielding schedule, but rather dates and numbers may be temporarily altered to deal with unusual circumstances. For example, stock may be turned into rest pastures in years of unusually low forage production (Hormay 1978).

APPENDIX H

METHODOLOGIES FOR ECONOMIC ANALYSIS

Economic impacts to livestock operators and the livestock industry were analyzed using a series of five linear programming (LP) models. Livestock operations in the Salt Wells-Pilot Butte area were categorized into five groups in an effort to combine homogeneous operations (Table H-1); and a ranch economic profile was developed for each group. The economic profiles shown in Tables H-2 to H-6 were the bases for formulating the models (Gee 1981). These profiles were developed using localized feed costs and production costs for specific types and sizes of livestock enterprises as reported by the USDA Economic Statistics and Cooperative Service (1979 and 1980). All production costs were indexed to 1980 by the agricultural prices paid index, the federal grazing fees are those for 1980, and all receipts were based on Wyoming average livestock market prices (Wyoming Crop and Livestock Reporting Service 1980 and 1981) from 1975 to 1980. Receipts were indexed to 1980 by the consumer price index before the mean was calculated (a five-year average was used to average the bias, high or low, of any single year's receipts). The economic profiles were reviewed by three local banks in Rock Springs, Wyoming (see Chapter 3), to verify that the costs and returns of a given operation were representative of the region. It is important to realize that the economic profiles are a composite of many ranches within a group (based on herd size and season of BLM forage use), and a profile for a specific group is not necessarily comparable to any single operation in that group.

The LP models were constructed with the objective of maximizing returns above variable cash costs, subject to a set of linear constraints that resulted from restrictions on forage supplies available to the operator. The models were used to evaluate the changes in cash costs, noncash costs, and revenues that resulted from alternative levels of BLM forage allocation. Range leases outside the area were included in the models as an additional source of summer forage or substitute to BLM summer and fall grazing, but the cost of the range lease was assumed to be twice the 1980 rate ($8.00/AUM) to account for the transportation and management costs of moving livestock outside the area. Hay feeding was considered the only alternative to winter grazing on deeded and public lands.

In simplified terms, the linear programming process follows an iterative procedure of adding successive animal units until the marginal cost of one additional animal unit equals the marginal returns from that unit, or until a forage constraint is reached that will not allow the herd size to be increased further. When multiple forage sources are available during one grazing season, the model will select the lowest cost forage first, and the optimum solution will reflect the forage combination and herd size that maximizes return above cash costs for the enterprise.

Adjustments in BLM forage supplies were made under each alternative and the models were exercised to determine the economic impact on each livestock enterprise. The model results were then combined and aggregated to the allotment and alternative level.

Table H-1

SUMMARY OF RANCH ECONOMIC PROFILES

Class Description	Cattle Enterprises			Sheep Enterprises	
	Small Summer-Fall BLM Grazing	Large Summer-Fall BLM Grazing	All Sizes Winter BLM Grazing	Small Winter BLM Grazing	Large Winter BLM Grazing
Typical Herd Size	100	350	450	2,400	6,250
Gross Revenue 1/	$ 26,174	$ 84,070	$99,860	$130,374	$301,216
Total Cash Costs 2/	23,154	74,924	58,683	82,938	214,882
Value of Family Labor	4,149	9,342	12,011	7,440	19,375
Depreciation	4,484	12,422	15,971	9,048	23,563
Interest on Investment Other Than Land	5,368	22,085	28,395	17,592	45,813
Return Above Cash Costs	3,020	9,146	41,177	47,436	86,334
Return Above Cash Costs and Family Labor	-1,129	- 196	29,166	39,996	66,959
Return to Total Investment 3/	- 5,613	-12,618	13,195	30,948	43,396
Return to Land 4/	-10,981	-34,703	-15,200	13,356	-2,417

Sources: U.S. Depsrtment of Agriculture, Economics Statistics and Cooperative Service 1980. Costs of producing feeder cattle in the United States, final 1978, preliminary 1979 and projections for 1980. U.S. Government Printing Office, Washington, 63-731 0, July 1980.

U.S. Department of Agriculture, Economics Statistics and Cooperative Service 1980. Costs of producing sheep in the United States, final 1978, preliminary 1979 and projections for 1980. U.S. Government Printing Office, Washington, 63-669 0, July 1980.

1/ Gross revenues were calculated using averege livestock prices from 1975 to 1980 (Wyoming Crop and Livestock Reporting Service) adjusted to 1980 dollars by the consumer price index.

2/ Costs are based on the USDA, ESCS budgets; indexed to 1980.

3/ Return to total investment represents the capital available to service long-term debts.

4/ Return to land represents the residual receipts from return to total investment less an interest charge for total investment other than land.

Table H-2

ECONOMIC PROFILE FOR SALT WELLS-PILOT BUTTE AREA CATTLE ENTERPRISES OF 0-175 HERD SIZE (TYPICALLT 100 COWS)--SUMMER/FALL BLM GRAZING

Item	Unit	Quantity	Average Weight	Price Cwt 4/	Total Value
Sales:					
Steer calves	Head	34	375	72.30	9,218
Heifer calves	Head	23	355	72.30	5,903
Yearling steers	Head	9	650	63.64	3,723
Yearling heifers	Head	6	600	63.64	2,291
Cull cows	Head	12	950	44.20	5,039
TOTAL					26,174
TOTAL/COW					$261.74

Cash Costs:	Total Cost	Cost/Cow
BLM grazing fee $2.36/AUM	1,133	11.33
Forest grazing fee $2.51/AUM	567	5.67
Private range lease/rent	---	---
State lease $1.65/AUM	106	1.06
Hay (produce) $57/Ton	1,938	19.38
Hay (purchase) $65/Ton	9,295	92.95
Protein supplement	54	.54
Irrigated pasture $7.55/AUM	332	3.32
Salt and minerals	237	2.37
Concentrate feeds	337	3.37
Veterinary and medicine	437	4.37
Hired trucking	186	1.86
Marketing	317	3.17
Fuel and lubricants	1,109	11.09
Repairs machines and equipment 1/	1,034	10.34
Taxes	1,673	16.73
Insurance 2/	576	5.76
Interest on operating capital (10%)	2,105	21.05
General farm overhead	662	6.62
Hired labor 3/	1,056	10.56
TOTAL CASH COSTS	23,154	231.54
Other Costs:		
Family labor	4,149	41.49
Depreciation	4,484	44.84
Interest on investment other than land	5,368	53.68
TOTAL OTHER COSTS	14,001	140.01
Return above cash costs	3,020	30.20
Return above cash costs and family labor	-1,129	-11.29
Return to total investment	-5,613	-56.13
Return to land	-10,981	-109.81

Production Assumptions - Herd size 100 cows; 90% calf crop; 4% calf loss to weaning; 25 cows per bull; 14% replacement rate; 2% cow lose; 80% of offspring sold as calves.

1/ Equipment is that portion of the machinery used in livestock production (i.e., holding pens, lots, stock tanks, loading chutes, etc.) and machinery includes trucks, tractors, bailers, etc.

2/ Insurance includes all types for buildings, home, livestock, machinery, etc.

3/ Hired labor included all labor employed for crop production and livestock activities but excludes all family labor.

4/ Price per 100 weight.

Teble H-3

ECONOMIC PROFILE FOR SALT WELLS-PILOT BUTTE AREA CATTLE ENTERPRISES OF 176 OR MORE HERD SIZE (TYPICALLY 350 COWS)--SUMMER/FALL BLM GRAZING

Item	Unit	Quentity	Average Weight	Price Cwt 4/	Total Value
Sales:					
Steer calves	Head	114	375	72.30	30,908
Heifer calves	Head	68	355	72.30	17,453
Yeerling steers	Head	28	650	63.64	11,582
Yeerling heifers	Head	17	600	63.64	6,491
Cull cows	Head	42	950	44.20	17,636
TOTAL					84,070
TOTAL/COW					$240.20

Cash Costs:	Total Cost	Cost/Cow
BLM grazing fee $2.36/AUM	3,427	9.79
Forest grazing fee $2.51/AUM	2,081	5.95
Private range leese/rent	---	---
Stete lesse $1.65/AUM	911	2.60
Hay (produce) $57/Tnn	6,270	17.91
Hay (purchese) $65/Ton	28,795	82.27
Protein supplemeot	175	.50
Irrigated paature $7.55/AUM	551	1.57
Salt and minerals	767	2.19
Conceotrate feeds	917	2.62
Veterinary and medicioe	1,435	4.10
Hired trucking	585	1.67
Marketing	1,019	2.91
Fuel end lubricaots	3,283	9.38
Repairs, machines end equipmeot 1/	3,052	8.72
Taxes	6,332	18.09
Insurance 2/	2,100	6.00
Interest oo opereting cepitel	6,811	19.46
General ferm overhead	2,090	5.97
Hired labor 3/	4,323	12.35
TOTAL CASH COSTS	74,924	214.05
Other Coats:		
Fsmily lebor	9,342	26.69
Depreciation	12,422	35.49
Interest oo inveatment other than lend	22,085	63.10
TOTAL OTHER COSTS	43,849	125.28
Return ebove cash costs	9,146	26.13
Return above cash costs end femily lebor	- 196	-.56
Reture to total iovestment	-12,618	-36.05
Return tn land	-34,703	-99.15

Production Asaumptinns: Herd aize 350 cows; 85% calf crop; 5% calf loss to weening; 20 cnws per bull; 16% replacement rete; 4% cow loss; 80% of offapring sold ea calves.

1/ Equipment is that portion of the machioery used in livestock production (i.e., holding pens, lots, atock tanks, loading chutes, etc.) snd machinery includes trucks, tractors, bailers, etc.

2/ Insuraoce includes all types fnr buildings, home, livestock, machinery, etc.

3/ Hired lebor included all labnr employed for crop production and livestock activities but excludes all femily labor.

4/ Price per 100 weight.

Table H-4

ECONOMIC PROFILE FOR SALT WELLS-PILOT BUTTE AREA CATTLE ENTERPRISES OF ALL SIZES
(TYPICALLY 450 COWS)--WINTER BLM GRAZING AVAILABLE

Item	Unit	Quantity	Average Weight	Price Cwt 4/	Total Value
Sales:					
Steer calves	Head	135	375	72.30	36,602
Heifer calves	Head	70	355	72.30	17,967
Yearling steers	Head	34	650	63.64	14,064
Yearling heifers	Head	18	600	63.64	6,873
Cull cows	Head	58	950	44.20	24,354
TOTAL					98,860
TOTAL/COW					$221.91

Cash Costs:	Total Cost	Cost/Cow
BLM grazing fee $2.36/AUM	5,688	12.64
Forest grazing fee $2.51/AUM	3,582	7.96
Private range lease/rent $8.00/AUM	5,696	12.66
State lease $1.65/AUM	1,762	3.92
Hay (produce) $57/Ton	---	---
Hay (purchase) $65/Ton	910	2.02
Protein supplement	225	.50
Irrigated pasture $7.55/AUM	2,673	5.94
Salt and minerals	986	2.19
Concentrate feeds	1,179	2.62
Veterinary and medicine	1,845	4.10
Hired trucking	752	1.67
Marketing	1,310	2.91
Fuel and lubricants	4,221	9.38
Repairs, machines and equipment 1/	3,924	8.72
Taxes	7,650	17.00
Insurance 2/	2,700	6.00
Interest on operating capital	5,335	11.86
General farm overhead	2,687	5.97
Hired labor 3/	5,558	12.35
TOTAL CASH COSTS	58,683	130.41
Other Costs:		
Family labor	12,011	26.69
Depreciation	15,971	35.49
Interest on investment other than land	28,395	63.10
TOTAL OTHER COSTS	56,377	125.28
Return above cash costs	41,177	91.50
Return above cash costs and family labor	29,166	64.81
Return to total investment	13,195	29.32
Return to land	-15,200	-33.78

Production Assumptions: Herd size 450 cows; 80% calf crop; 6% calf loss to weaning; 20 cows per bull; 18% replacement rate; 5% cow loss; 80% of offspring sold as calves.

1/ Equipment is that portion of the machinery used in livestock production (i.e., holding pens, lots, stock tanks, loading chutes, etc.) and machinery includes trucks, tractors, bailers, etc.

2/ Insurance includes all types for buildings, home, livestock, machinery, etc.

3/ Hired labor included all labor employed for crop production and livestock activities but excludes all family labor.

4/ Price per hundred weight.

Teble H-5

ECONOMIC PROFILE FOR SALT WELLS-PILOT BUTTE AREA SHEEP ENTERPRISES
OF 0-3,500 HERD SIZE (TYPICALLY 2,400 EWES)--WINTER BLM GRAZING AVAILABLE

Item	Unit	Quantity	Averege Weight	Price Cwt 4/	Total Value
Seles:					
Sleughter Lambe	Head	212	95	72.76	14,654
Feeder Lambe	Head	1,204	80	72.76	70,083
Ewes	Head	336	120	23.36	9,419
Wool	Lbe.	27,704		.92	25,488
Wool Incentive Peyment	Dol.	25,488		.36	9,176
Unshorn Lamb Payment	Cwt.	1,165		1.33	1,549
TOTAL					130,374
TOTAL/EWE					$54.32
Ceeh Coete:			Total Coet	Coet/Ewe	
BLM Permit $2.36/AUM			7,982	3.33	
Forest Permit $2.50/AUM			3,580	1.49	
Private Range Leese $8.00/AUM			2,880	1.20	
Stete $1.65/AUM			1,178	.49	
Hay (purchaee) $65/Ton			1,170	.49	
Hey (produce) $57/Ton			---	---	
Sheep Pellets			264	.11	
Other feed			2,664	1.11	
Salt & Minerele			1,008	.42	
Spray & Dipping			48	.02	
Veterinery & Medicine			888	.37	
Marketing			240	.10	
Trucking			5,304	2.21	
Sheering & Tegging			4,824	2.01	
Utilities			1,320	.55	
Lamb Promotion			48	.02	
Orgenizetions			240	.10	
Legel & Accounting			984	.41	
Wool Storege			192	.08	
Predetor Control			1,680	.70	
Ram Deeth Loee			1,248	.52	
Mechine Fuel & Lubrication 1/			3,552	1.48	
Machine Repair 1/			1,872	.78	
Equipment Repeir 1/			696	.29	
Hired Lebor 3/			20,088	8.37	
Texee			6,960	2.90	
Insurence 2/			1,824	.76	
Generel Perm Overhead			2,664	1.11	
Intereet on Opereting Capital			7,540	3.14	
TOTAL			82,938	34.56	
Other Coete:					
Femily labor			7,440	3.10	
Depreciation			9,048	3.77	
Intereet on inveetment other than land			17,592	7.33	
TOTAL			34,080	14.20	
Return above cash coste			47,436	19.77	
Return ebove caeh coete end femily labor			39,996	16.67	
Return to total inveetment			30,948	12.90	
Return to land inveetment			13,356	5.57	

Production Aseumptione: Herd eize 2,400 Ewes (484 replacement ewee); 100% docking rete; 20% lamb loss docking to merket; 20% replecement rate (21% held to allow for 4% deeth lose of ewe lambe); aeeume 85% of lambe eold ae feedere; 6% ewee loee; 30 ewes per ram; 10 lbe./fleece weight for ewes, 6 lbe. for ewe lambe.

1/ Equipment ie that portion of the machinery used in livestock production (i.e., holding pens, lote, etock tanke, loading chutee, etc.) end mechinery includes trucks, tractore, bailere, etc.

2/ Insurance includee all types for buildinge, home, livestock, mechinery, etc.

3/ Hired lebor included all labor employed for crop production end livestock ectivitiee but excludes all family lebor.

4/ Price per hundred weight.

Table H-6

ECONOMIC PROFILE OF SALT WELLS-PILOT BUTTE AREA SHEEP ENTERPRISES
OF MORE THAN 3,500 (TYPICALLY 6,250 EWES)--WINTER BLM GRAZING AVAILABLE

Item	Unit	Quantity	Average Weight	Price Cwt 4/	Total Value
Sales:					
Slaughter Lambs	Head	452	95	72.76	31,243
Feeder Lambs	Head	2,564	80	72.76	149,245
Ewes	Head	937	120	23.36	26,266
Wool	Lbs.	72,860		.92	67,031
Wool Incentive Payment	Dol.	67,031		.36	24,131
Unshorn Lamb Payment	Cwt.	2,481		1.33	3,300
TOTAL					301,216
TOTAL/EWE					$48.19

Cash Costs:	Total Cost	Cost/Ewe
BLM Permit $2.36/AUM	23,222	3.72
Forest Permit $2.50/AUM	9,375	1.50
State $1.65/AUM	3,102	.50
Hay (purchase) $65/Ton	2,925	.47
Range lease $8/AUM	10,320	1.65
Sheep Pellets	688	.11
Other feed	6,938	1.11
Salt & Minerals	2,625	.42
Spray & Dipping	125	.02
Veterinary & Medicine	2,313	.37
Marketing	625	.10
Trucking	13,813	2.21
Shearing & Tagging	12,563	2.01
Utilities	3,438	.55
Lamb Promotion	125	.02
Organizations	625	.10
Legal & Accounting	2,563	.41
Wool Storage	500	.08
Predator Control	4,375	.70
Ram Death Loss	3,250	.52
Machine Fuel & Lubrication 1/	9,250	1.48
Machine Repair 1/	4,875	.78
Equipment Repair 1/	1,813	.29
Hired Labor 3/	52,313	8.37
Taxes	11,898	1.90
Insurance 2/	4,750	.76
General Farm Overhead	6,938	1.11
Interest on Operating Capital	19,535	3.13
TOTAL	214,882	34.39
Other Costs:		
Family labor	19,375	3.10
Depreciation	23,563	3.77
Interest on investment	---	---
other than land	45,813	7.33
TOTAL	88,751	14.20
Return above cash costs	86,334	13.81
Return above cash costs and family labor	66,959	10.71
Return to total investment	43,396	6.94
Return to land investment	-2,417	-0.39

Production Assumptions: Herd size 6,250 Ewes (1,380 replacement ewe lambs); 95% docking rate; 25% lamb loss docking to market; 22% replacement rate (23% held to allow for 4% death loss of ewe lambs); 85% of lambs sold as feeders; 7% ewe loss; 30 ewes per ram; 10 lbs./fleece weight for ewes, 6 lbs. for ewe lambs.

1/ Equipment is that portion of the machinery used in livestock production (i.e., holding pens, lots, stock tanks, loading chutes, etc.) and machinery includes trucks, tractors, bailers, etc.

2/ Insurance includes all types for buildings, home, livestock, machinery, etc.

3/ Hired labor included all labor employed for crop production and livestock activities but excludes all family labor.

4/ Price per hundred weight.

APPENDIX H

Direct impacts on the livestock operators were determined by multiplying the change in BLM AUMs by the average change in returns above cash costs per AUM, given an increase or decrease in forage allocation, for each enterprise. Regional impacts were determined based on the dollar change in livestock sales from the region. The direct change in livestock sales resulting from changes in BLM forage allocation was also derived from the LP models.

Tables H-7 to H-11 show the revenues, cash and noncash costs, returns to the livestock enterprise, and herd size under a 25 percent increase; 50 percent decrease; and 100 percent decrease in BLM forage allocation. These levels were selected for the purposed of analysis, on the basis that a 25 percent increase would cover the range of forage increases on any allotment and a 100 percent decrease would serve to analyze the impacts of the License No Livestock Use on Public Lands Alternative. The 50 percent decrease level was used only as a midpoint for impact analysis. The model results summarized in these tables show that in all cases, an increase in BLM forage allocation up to 25 percent would increase the return above cash costs, and theconverse is also true for a decrease in BLM forage allocation down to the zero level. This situation was not always true when deductions were made for noncash costs. In the small and medium herd size cattle enterprises (typical herd size 100 and 350 cows) and large sheep enterprise (typically 6,250 ewes), the return to land was decreased with an increase in BLM AUMs (Tables H-7, H-8, and H-11). These results can be explained by the relatively low rate of return per animal unit in comparison to total noncash costs (family labor, depreciation, and imputed interest charge on investment other than land). This situation is still consistent with an operator maximizing net income in the short term, although the level of return to the other factors of production (family labor and capital investment other than land) may be decreased. In the event of increased livestock prices or decreased production costs a larger return per animal unit would be realized, and returns to family labor and total capital investment would be increased.

Table H-7

IMPACTS OF ALTERNATIVE BLM FORACE ALLOCATIONS ON CATTLE ENTERPRISES
OF 0-175 HERD SIZE (TYPICALLY 100 COW HERD)--SUMMER/FALL BLM CRAZINC

Item	No Change	Increase In BLM AUMs 25%	Decrease In BLM AUMs 50%	Decrease In BLM AUMs 100%
Gross Income	26,174	28,916	19,142	12,198
Total Cash Costs	23,154	25,291	17,540	12,017
Value of Family Labor	4,149	4,584	3,304	1,934
Depreciation	4,484	4,505	4,429	4,376
Interest on Investment Other Than Land	5,368	5,803	4,253	3,153
Return Above:				
Cash Costs	3,020	3,625	1,602	181
Cash Cost and Family Labor	-1,129	-959	-1,432	-1,753
Return to Total Investment	-5,613	-5,464	-5,861	-6,129
Return to Land	-10,981	-11,267	-10,114	-9,282
Herd Size	100	110	73	47

Table H-8

IMPACTS OF ALTERNATIVE BLM FORACE ALLOCATIONS ON CATTLE ENTERPRISES
OF 176 OR MORE HERD SIZE (TYPICALLY 350 COW HERD)--SUMMER/FALL BLM CRAZINC

Item	No Change	Increase in BLM AUMs 25%	Decrease in BLM AUMs 50%	Decrease in BLM AUMs 100%
Gross Income	84,070	92,948	66,462	48,853
Total Cash Costs	74,924	82,355	60,187	45,449
Value of Family Labor	9,342	10,328	8,371	5,428
Depreciation	12,422	12,527	12,320	12,007
Interest on Investment Other Than Land	22,085	24,122	18,045	14,005
Return Above:				
Cash Costs	9,146	10,593	6,275	3,404
Cash Cost and Family Labor	-196	265	-2,096	-2,024
Return to Total Investment	-12,618	-12,262	-14,416	-14,031
Return to Land	-34,703	-36,384	-32,461	-28,036
Herd Size	350	387	276	203

Table H-9

IMPACTS OF ALTERNATIVE BLM FORAGE ALLOCATIONS ON CATTLE ENTERPRISES
ALL HERD SIZES (TYPICALLY 450 COW HERD)--WINTER BLM GRAZING

Item	No Change	Increase in BLM AUMs 25%	Decrease in BLM AUMs 50%	100%
Gross Income	99,860	103,495	78,585	77,630
Total Cash Costs	58,683	60,836	57,794	78,680
Value of Family Labor	12,011	12,470	9,452	9,337
Depreciation	15,971	16,021	15,689	15,676
Interest on Investment Other Than Land	28,395	29,345	23,097	22,859
Return Above:				
Cash Costs	41,777	42,659	20,791	-1,050
Cash Cost and Family Labor	29,166	30,189	11,339	-10,387
Return to Total Investment	13,195	14,168	-4,350	-26,063
Return to Land	-15,200	-15,177	-27,447	-48,922
Herd Size	450	467	354	350

Table N-10

IMPACTS OF ALTERNATIVE BLM FORAGE ALLOCATIONS ON SHEEP ENTERPRISES
OF 0-3,500 HERD SIZE, (TYPICALLY 2,400 EWES)--WINTER BLM GRAZING

Item	No Change	Increase in BLM AUMs 25%	Decrease in BLM AUMs 50%	100%
Gross Income	130,374	143,568	104,451	84,589
Total Cash Costs	82,938	90,963	77,173	77,802
Value of Family Labor	7,440	8,193	5,961	4,828
Depreciation	9,048	9,325	8,504	8,088
Interest on Investment Other Than Land	17,592	19,022	14,782	12,629
Return Above:				
Cash Costs	47,436	52,605	27,278	6,787
Cash Cost and Family Labor	39,996	44,412	21,317	1,959
Return to Total Investment	30,948	35,087	12,813	-6,129
Return to Land	13,356	16,065	-1,969	-18,758
Herd Size	2,400	2,643	1,923	1,557

Table N-11

IMPACTS OF ALTERNATIVE BLM FORAGE ALLOCATIONS ON SHEEP ENTERPRISES
OF MORE THAN 3,500 HERD SIZE (TYPICALLY 6,250 EWES)--WINTER BLM GRAZING

Item	No Change	Increase in BLM AUMs 25%	Decrease in BLM AUMs 50%	100%
Gross Income	301,216	338,868	160,848	90,662
Total Cash Costs	214,882	242,494	127,343	84,935
Value of Family Labor	19,375	21,797	10,346	5,238
Depreciation	23,563	24,445	20,271	8,265
Interest on Investment Other Than Land	45,813	50,415	28,658	13,413
Return Above:				
Cash Costs	86,334	96,374	33,505	5,727
Cash Cost and Family Labor	66,959	74,577	23,159	489
Return to Total Investment	43,396	50,132	2,888	-7,776
Return to Land	-2,417	-283	-25,770	-21,189
Herd Size	6,250	7,031	3,337	1,689

GLOSSARY

References consulted in the preparation of the definitions include Bureau of Land Management Manuals and publications; *Glossary of Terms Used in Range Management* (Society for Range Management 1974); *Glossary of Soil Terms* (Soil Science Society of America 1975); *Resource Conservation Glossary* (Soil Conservation Society of America 1976); and *Webster's Third International Dictionary.*

ACTIVE PREFERENCE. That portion of a grazing preference for which active grazing use is authorized.

ALKALINITY. The quality or state of being alkaline; the concentration of OH negative ions. In reference to soils, an alkaline soil has a pH of greater than 7.0.

ALLOTMENT MANAGEMENT PLAN (AMP). An AMP is a documented program applicable to livestock operations on public lands; it is prepared by the BLM in consultation with the permittees involved. Provisions contained within an AMP include the locations, specifications, and maintenance agreements concerning the range improvements, as well as specifications for the methodology used to achieve the state multiple-use objectives.

AMELIORATE. To make better; improve.

ANIMAL UNIT. Considered to be one mature (1,000 pounds) cow or the equivalent, based upon the average daily forage consumption of 26 pounds dry matter per day. In July 1980, the BLM met with the University of Wyoming and the Wyoming Game and Fish Department to determine the equivalent animal units for other ungulate species; based on a weight conversion (3 percent body weight per day), the equivalents are:10.5 for antelope; 7.6, deer; 2.1 elk; 1.2, moose; 0.9, wild horses; and 5.2, sheep. The competition factor is not included in these numbers.

ANIMAL UNIT MONTH (AUM). The amount of forage necessary to sustain one cow or the equivalent (see ANIMAL UNIT) for a period of one month.

ANION. An ion that is negatively charged. Common anions include carbonate, sulfate, and chloride.

AUTHORIZED GRAZING USE. That portion of the grazing preference for which livestock grazing use is authorized.

BIOMASS. The sum total of living plants and animals above and below the ground in an area at a given time.

BIOTIC. In ecology, those elements of the environment which are the result of living organisms and their activities; distinct from physical or chemical factors.

CATION. An ion that is positively charged; common soil and water cations are calcium, magnesium, sodium, potassium, and hydrogen.

CLIMAX COMMUNITY. The highest ecological development of a plant community capable of perpetuation under the prevailing climatic and edaphic conditions.

COLLOIDS. In soils, organic or inorganic matter having very small particle size and a correspondingly large surface area per unit of mass. Most colloidal particles are too small to be seen with an ordinary compound microscope.

DEFERRED GRAZING. Grazing under a system where one or more range units (pastures) are rested at planned intervals throughout the growing season of key plants.

ECOLOGICAL CONDITION. The present state of the vegetation of a range site in relation to the climax (potential natural) plant community for that site.

EDAPHIC. Refers to soil conditions or characteristics (chemical, physical, or biological) which influence organisms.

EGRESS. The act or right of going or coming out of lands.

EVAPOTRANSPIRATION. Loss of water from the soil both by evaporation and by transpiration from the plants growing thereon.

EUTROPHICATION. The normally slow process by which a lake evolves into a bog or marsh, then into a terrestrial area. During this process, the lake becomes so rich in dissolved nutrients, such as nitrogen and phosphorous compounds, that algae and other microscopic plant life overpopulate the lake, "choking" it, and causing it to dry up.

GLOSSARY

FECAL COLIFORM. A group of bacteria used as an indicator of sanitary quality in water. The total coliform group is an indicator of sanitary significance because the organisms are normally present in large numbers in the intestinal tracts of on public lands apportioned humans and other warm-blooded animals.

GRAZING PREFERENCE. The total number of and attached to base property owned or controlled by a permittee or lessee.

HALOPHYTIC. A plant that grows in a salty soil.

HERBICIDE. A phytotoxic chemical used for killing or inhibiting the growth of plants.

HORIZON (SOIL). A layer of soil or soil material approximately parallel to the land surface and differing from adjacent genetically related layers in physical, chemical, and biological characteristics such as color, structure, texture, consistency, kinds and numbers of organisms present, degree of acidity or alkalinity, etc.

INDIGENOUS. Born, growing, or produced naturally (native) in an area, region, or country.

INGRESS. The act of entering lands.

ION. An atom or group of atoms which has become electrically charged either by loss or by gain of one or more electrons. See ANIONS and CATIONS.

JTU (JACKSON TURBIDITY UNITS). A measurement of the suspended solids in a liquid.

KEY FORAGE SPECIES (OR KEY SPECIES). (1) Forage species whose use serves as an indicator to the degree of use of associated species. (2) Those species which must, because of their importance, be considered in the management program.

LEPTOSPIROSIS. A group of diseases of man and domestic animals caused by infection with a genus of a slender aerobic spirochetes (*Leptospira*).

LEVERAGED CAPITAL. The money that is borrowed against the owner's equity to raise additional capital. The degree to which an enterprise is leveraged refers to the financial position as measured through the debt to asset ratio.

LIVESTOCK CONVERSION. When a livestock operator changes use in kind of livestock, such as changing use from sheep to cattle.

MICROMHO. One-millionth of a mho, which is a unit of electrical conductance that is equal to reciprocal of an ohm (unit of resistance).

NONUSE. The AUMs out of an operator's active preference, that a livestock operator voluntarily does not use, on a yearly basis.

PARENT MATERIAL. The unconsolidated and, more or less, chemically weathered mineral or organic matter from which soil develops.

PARTURITION. Giving birth to offspring.

pH. The negative logarithm of the hydrogen ion (H+) concentration. A low pH indicates an acid, and a high pH indicates an alkaline substance. A pH of 7.0 is considered neutral.

PUBLIC LANDS. Any lands or interests in land outside Alaska owned by the U.S. Government and administered by the Secretary of the Interior through the Bureau of Land Management, except those lands located on the Outer Continental Shelf and those held for the benefit of Indians.

PHYTOTOXIC. Toxic to plants.

PRIVATELY CONTROLLED. Those AUMs associated with private, state, or leased lands, that are unfenced within an allotment.

PROFILES (SOIL). A vertical section of soil through all its horizons from the surface into the parent material.

RANGE CONDITION. Same as ecological condition.

RANGE SITE. A distinctive kind of rangeland, which in the absence of abnormal disturbance and physical site deterioration, has the potential to support a native plant community typified by an association of species different from that of other sites. This differentiation is based upon significant differences in kind or proportion of species, or total productivity.

REST-ROTATION GRAZING. Grazing under a system where one or more range units (pastures) are rested at planned intervals throughout the entire year.

SEASON OF USE. The time of year or season that a livestock operator grazes livestock on an allotment.

GLOSSARY

SOIL WAXES/RESINS. A component of the organic matter in soils; other components are carbohydrates, proteins, lignins, and fats.

STRUCTURE (SOIL). The combination or arrangement of primary soil particles into secondary units. The units are arranged on the basis of size, shape, and degree of distinctness into classes, types, and grades, respectively. The units usually are not arranged in the profile in such a way as to form a distinctive pattern.

SUSPENDED PREFERENCE. Those federal privileges which have been placed in involuntary nonuse, at adjudication or for livestock conversions.

TURBIDITY. The cloudy condition caused by suspended solids in a liquid.

UNGULATES. Herbivorous, hoofed animals.

ZOONOTIC. Relating to a disease communicable from animals to man under natural conditions.

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Private

Federal (BLM)

State

Grazing Allotment Boundary

3018 Grazing Allotment Number

N

0 5 10 Miles

DAGGETT COUNTY, UTAH MOFFAT COUNTY, COLORADO

Map 1.2
LAND STATUS AND ALLOTMENT BOUNDARIES
Salt Wells Pilot Butte
Grazing Environmental Impact Statement

Map 2-3
PRONGHORN ANTELOPE AND MOOSE HABITAT
Salt Wells Pilot Butte
Grazing Environmental Impact Statement

VEGETATION	SOILS	
Sagebrush Black Sagebrush Rabbit Brush	Group 1.	Shallow to Deep; Loamy and/or Sandy Soils with pH of < 8.5
Saltbush Budsage Birdsfoot Sage Woody Aster	Group 2.	Deep Alluvial Soils Associated with Riparian Areas; pH of > 8.5
Shadscale Spiny Hopsage Horsebrush	Group 1.	
Wetlands Buffaloberry Willows Sedge Rushes	Group 3.	Deep Alluvial Soils Associated with Densely Vegetated Riparian Areas; pH of < 8.5
Juniper Mountain Mahogany	Group 4.	Sandstone Outcrops with Pockets of Deep Sandy Soils
Mountain Shrub	Group 1.	
Conifers	Group 5.	Shallow to Deep Skeletal Soils Located on Mountain Tops and Steep North - Facing Slopes
Aspen	Group 5.	
Upland Grass	Group 2.	
Mat Forbs	Group 4.	
Greasewood	Group 2.	
Lowland Grass Dune Grass	Group 2.	
Dunes, Private Property, Large Body of Water (Flaming Gorge, Green River) Badlands Rock	Group 6.	Badland, Sand Dune, and Miscellaneous Land Features

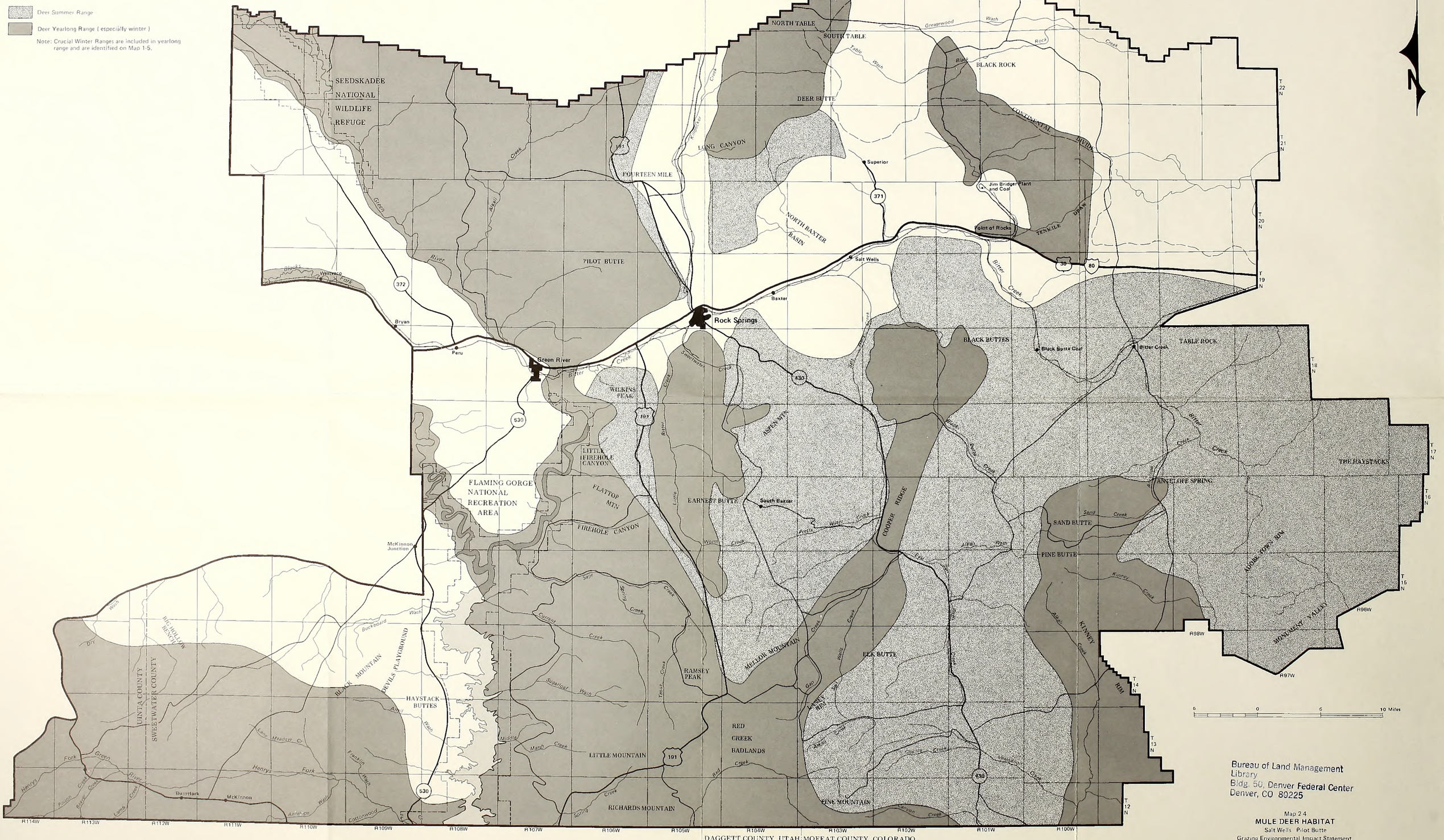
DAGGETT COUNTY, UTAH: MOFFAT COUNTY, COLORADO

Map 2:1
SOILS AND VEGETATION
Salt Wells - Pilot Butte
Grazing Environmental Impact Statement

Deer Summer Range

Deer Yearlong Range (especially winter)

Note: Crucial Winter Ranges are included in yearlong range and are identified on Map 1-5.



DAGGETT COUNTY, UTAH: MOFFAT COUNTY, COLORADO

Map 2-4
MULE DEER HABITAT
Salt Wells Pilot Butte
Grazing Environmental Impact Statement

Elk Yearlong Range (especially winter)

Elk Summer Range

Note: Crucial Winter Ranges are included here in yearlong range and are identified on Map 1-5.

SEEDSKADEE NATIONAL WILDLIFE REFUGE
NORTH TABLE
SOUTH TABLE
BLACK ROCK
DEER BUTTE
CONTINENTAL DIVIDE
LONG CANYON
FOURTEEN MILE
Superior
Jim Bridger Plant and Coal
NORTH BAXTER BASIN
Point of Rocks
TEN MILE DRAW
Salt Wells
Baxter
Rock Springs
PILOT BUTTE
Westvaco
Bryan
Peru
Green River
WILKINS PEAK
ASPEN MTN
BLACK BUTTES
Black Butte Coal
Bitter Creek
TABLE ROCK
THE HAYSTACKS
ANTELOPE SPRING
LITTLE FIREHOLE CANYON
FLATTOP MTN
FIREHOLE CANYON
FLAMING GORGE NATIONAL RECREATION AREA
EARNEST BUTTE
South Baxter
COOPER RIDGE
SAND BUTTE
PINE BUTTE
ADOBE TOWN RIM
MONUMENT VALLEY
McKinnon Junction
BIG HOLLOW BENCH
UINTA COUNTY
SWEETWATER COUNTY
BLACK MOUNTAIN
DEVILS PLAYGROUND
HAYSTACK BUTTES
RAMSEY PEAK
MELLOR MOUNTAIN
ELK BUTTE
LANEY RIM
KINNEY RIM
RED CREEK BADLANDS
LITTLE MOUNTAIN
RICHARDS MOUNTAIN
PINE MOUNTAIN
Burntfork
McKinnon
DAGGETT COUNTY, UTAH
MOFFAT COUNTY, COLORADO
R114W
R113W
R112W
R111W
R110W
R109W
R108W
R107W
R106W
R105W
R104W
R103W
R102W
R101W
R100W
R98W
R97W
R96W
T 22 N
T 21 N
T 20 N
T 19 N
T 18 N
T 17 N
T 16 N
T 15 N
T 14 N
T 13 N
T 12 N
5 0 5 10 Miles

Map 2-5

ELK HABITAT

Salt Wells - Pilot Butte

Grazing Environmental Impact Statement